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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1889.

No. 253

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, AND THE NATIONAL DAIRY COMPANY, APPELLANTS,

vs.

THE FAIRBANK CANNING COMPANY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF ILLINOIS.

FILED OCTOBER 26, 1886.

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1 Pleas in the circuit court of the United States for the northern district of Illinois, held at the United States court rooms, in the city of Chicago, in the district aforesaid, before the Hon. Henry W. Blodgett, district judge of the United States for said district, on Monday, the twenty-second day of March, in the adjourned March term of said court, in the year of our Lord one thousand eight hundred and eighty-six, and of our Independence the one hundred and tenth year.

WM. H. BRADLEY, *Clerk.*

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY COMPANY
vs.
FAIRBANK CANNING COMPANY.
} 18235. In Chancery.

NORTHERN DISTRICT OF ILLINOIS, *ss:*

Be it remembered that on the eleventh day of December, 1882, came the complainants, by their solicitors and filed in the clerk's office of the circuit court of the United States for the northern district of Illinois, at Chicago, in said district, their bond for costs and bill of complaint in said above-entitled cause; which said bond and bill are, respectively, in the words and figures following, to wit:

2 *Bond.*

UNITED STATES OF AMERICA,
Northern District of Illinois, } *ss:*

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY COMPANY
vs.
FAIRBANK CANNING COMPANY.
} In Chancery.

I enter myself security for costs in this cause and promise to pay all costs which may accrue to the opposite party in this action or to any of the officers of this court, and in default of payment by the complainants of any costs ordered or adjudged to be paid by them hereby agree and stipulate that execution may issue against my property for any costs taxed against them.

Dated this 8th day of November, A. D. 1882.

JAMES M. DAVIS.

Endorsed: Filed Dec. 11, 1882. Wm. H. Bradley, clerk.

3 In the Circuit Court of the United States in and for the Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY COMPANY
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

To the honorable the judges of the circuit court of the United States in and for the northern district of Illinois:

The Commercial Manufacturing Company, Consolidated, a corporation organized and operating under and by virtue of the laws of the State of New York, having its principal place of business in the city of New York, and being a citizen of said State, and the National Dairy Company, a corporation organized and doing business under and by virtue of the laws of the State of Ohio, having its principal place of business at Chicago, in the State of Illinois, and a citizen of said State, bring this their bill of complaint against Fairbank Canning Company, a corporation organized and doing business under and by virtue of the laws of the State of Illinois, and having its principal place of business at Chicago, in said State of Illinois, and a citizen of said State.

And thereupon your orators complain and say that before
4 the procuration of the letters patent of the United States hereinafter set forth one Hippolyte Mége, of Paris, France, made the discovery that when animal fat is rendered at a low temperature, considerably below that employed in the ordinary rendering of fat in the manufacture of tallow, it has the taste of molten butter, and, not having that peculiarly disagreeable flavor which characterizes tallow, it is a palatable and healthful article of food, having the properties and qualities of butter obtained from milk elaborated by natural processes from fat through the cellular mammary tissue by the cow.

That the said discovery of the said Mége was publicly announced to the world in scientific publications and otherwise, and from the time it was so announced until the present the merit of the discovery has without qualification been conceded to the said Mége.

And your orators further show unto your honors that the said Hippolyte Mége, being so as aforesaid the original and first inventor of said improvement, made application to the proper Department of the Government of the United States for letters patent therefor in accordance with the then existing acts of Congress in that behalf, and that, having in all respects complied with the conditions and requirements of said acts of Congress and with the rules and requirements of the Commissioner of Patents, letters patent of the United States for said invention were, on the 30th day of December, A. D. 1873, issued to the said Hippolyte Mége in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents, bearing date the day and year aforesaid and num-

bered 146,012, whereby there was granted and secured to the said Hippolyte Mége and to his heirs, administrators, and assigns for the term of seventeen years from and after the date of said letters patent the full and exclusive right and liberty of making, using, and vending to others to be used the said invention and improvement set forth in said letters patent, as in and by said original letters patent or a duly certified copy thereof in court to be produced will more fully appear.

And your orators further show unto your honors that by
5 virtue of mesne assignments in writing the United States Dairy Company, a corporation organized and operating under and by virtue of the laws of the State of New York, became possessed of all right, title, and interest in and to said letters patent and invention, which assignments were duly recorded in the Patent Office of the United States, at Washington, as by the said assignments or duly authenticated copies thereof, with the certificates of such recording thereto affixed, ready in court to be produced, will more fully and at large appear.

And your orators further show unto your honors that afterwards, and before the term for which said letters patent No. 146,012 were granted had expired, the said letters patent, being inoperative or invalid by reason of a defective or insufficient specification or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, and the said error having arisen by inadvertence, accident, or mistake and without any fraudulent or deceptive intention, were surrendered to the Commissioner of Patents by the said Hippolyte Mége by and with the consent of the said The United States Dairy Company, assignee of said Mége, and the same were canceled; and afterwards, to wit, on the twelfth day of May, A. D. 1874, the Commissioner of Patents, in conformity to the acts of Congress in such case made and provided, duly issued and delivered to the said The United States Dairy Company, assignee of said Hippolyte Mége, a new patent for the same invention and in accordance with the corrected specification, in proper form of law, sealed with the seal of the Patent Office, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents, which said reissued letters patent bear date the day and year last aforesaid and are numbered 5868, whereby there was granted to the said The United States Dairy Company, its successors and assigns, for the unexpired part of the term of seventeen years from the said thirtieth day of December, 1873, the date of the original patent, the full and exclusive right and liberty of making, using, and vending to others to be used the said invention and improvement therein described and claimed, as in and by said reissued letters patent or a duly certified copy thereof in court to be produced will more fully appear.

6 And your orators further show unto your honors that afterwards, and before the term for which said reissued letters patent No. 5868 were granted had expired, the said reissued letters patent, being inoperative or invalid by reason of a defective or insufficient specification or by reason of the patentee claiming as his

own invention or discovery more than he had a right to claim as new, and the said error having arisen by inadvertence, accident, or mistake and without any fraudulent or deceptive intention, were surrendered to the Commissioner of Patents by the said Hippolyte Mége by and with the consent of the said The United States Dairy Company, assignee of said Mége, and the same were canceled; and afterwards, to wit, on the twenty-fourth day of September, A. D. 1878, the Commissioner of Patents, in conformity to the acts of Congress in such case made and provided, duly issued and delivered to the said The United States Dairy Company, assignee of said Hippolyte Mége, a new patent for the same invention and in accordance with the corrected specification, in proper form of law, sealed with the seal of the Patent Office, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents, which said reissued letters patent bear date the day and year last aforesaid and are numbered 8424, whereby there was granted to the said The United States Dairy Company, its successors and assigns, for the unexpired part of the term of seventeen years from the said thirtieth day of December, 1873, the date of the original patent, the full and exclusive right and liberty of making, using, and vending to others to be used the said invention and improvement therein described and claimed, as in and by said reissued letters patent or a duly certified copy thereof in court to be produced will more fully appear.

And your orators further show unto your honors that on or about the 9th day of June, eighteen hundred and eighty, the said United States Dairy Company, by an assignment in writing of that date, sold, assigned, and transferred unto William Remsen all its right, title, and interest in and to said letters patent and invention, as by said assignment or a duly authenticated copy thereof and the certificate of recording thereto affixed, ready in court to be produced, will fully and at large appear.

7 And your orators further show unto your honors that on or about the 9th day of June, 1880, the said William Remsen, by an assignment in writing of that date, sold, assigned, and transferred unto your orator, The Commercial Manufacturing Company, Consolidated, all his right, title, and interest in and to said letters patent and invention, as by said assignment or a duly authenticated copy thereof and the certificate of recording thereto affixed, ready in court to be produced, will fully and at large appear.

And your orators further show unto your honors that afterwards, and before the procuration of the reissued letters patent hereinafter next mentioned, the said Hippolyte Mége departed this life, and your orator, being the sole and exclusive owner of said invention of said Mége and of the letters patent issued by the United States therefor and ascertaining that said reissued letters patent No. 8424 were inoperative or invalid by reason of a defective or insufficient specification or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, and the said error having arisen by inadvertence, accident, or mistake and without any fraudulent or deceptive intention, surrendered to

the Commissioner of Patents the said reissued letters patent No. 8424 and the same were canceled; and afterwards, to wit, on the 13th day of June, A. D. 1882, the Commissioner of Patents, in conformity to the acts of Congress in such case made and provided, duly issued and delivered to your orator a new patent for the same invention, and in accordance with the corrected specification, in proper form of law, sealed with the seal of the Patent Office, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents, which said reissued letters patent bear date the day and year last aforesaid and are numbered 10137, whereby there was granted to your orator, its successors and assigns, for the unexpired part of the term of seventeen years from the said 30th day of December, 1873, the date of the original patent, the full and exclusive right and liberty of making, using, and vending to others to be used the said invention and improvement therein described
8 and claimed, as in and by said reissued letters patent, a copy of which is hereto annexed and made a part of this bill of complaint and marked "Exhibit A," will more fully appear.

And your orators further show unto your honors that your orator, The National Dairy Company, is the exclusive licensee under said reissued letters patent and invention for the State of Illinois by a license dated November 26, 1879, which license was duly recorded in the Patent Office of the United States at Washington, as by said license or a duly authenticated copy thereof and the certificate of such recording thereto affixed, ready in court to be produced, will fully and at large appear, under which license a royalty of one-half cent per pound on all products made under said license is agreed to be paid by your orator, the said The National Dairy Company.

And your orators further show unto your honors that since the granting of letters patent aforesaid for the invention of said Hippolyte Mége the said patentee and those acting under him have brought the said invention into public use in various parts of the country, and that the same is of great value, and has remained in the exclusive possession and use of said patentee and those holding under him, to the great benefit of the public and great gains to said patentee and assignee, until your orators were unjustly deprived by the acts of the defendant hereinafter mentioned, and that had it not been for such acts your orators would still be in the undisturbed possession and enjoyment of the exclusive privileges secured by said letters patent and in receipt of the profits of the same.

And your orators further show unto your honors, as they are informed and believe, that the said defendants hereinafter named, since said 13th day of June, eighteen hundred and eighty-two, and at divers times and occasions between that time and the time of filing this your orator's bill of complaint, well knowing all the facts hereinafter set forth, have infringed and are infringing said reissued letters patent No. 10137, at Chicago, in the northern district of Illinois, and elsewhere in the United States, by making, using, and vending to others to be used the improved material described in said reissued Mége patent No. 10137, produced by treating
9 animal fats so as to remove the tissues and other portions

named in the specification of said patent, with or without the addition of substances to change the flavor, consistency, or color, and also by practicing in the rendering of animal fats the process described in said reissued Mége patent No. 10137 of treating animal fats in the production of oleomargarine, well knowing the premises and without any legal assignment, grant, or license therefor and in defiance of your orator's exclusive right and privilege to make, use, and vend said invention throughout the United States and Territories as aforesaid, all of which is in violation of said letters patent; and the said defendant still persists in using said process, and do refuse to desist, although warned and requested so to do, whereby great injury has resulted to your orators and great gains and profits to a large sum of money have accrued to the said defendant from the use of your orator's exclusive rights, the full amount of which is unknown to your orators, but which in equity belong to your orators and should be accounted for by the said defendant to your orators and paid over to your orators as the avails of their exclusive rights aforesaid and profits and gains which your orators would have derived from their said patent rights but for the unlawful acts of the said defendant, as well as all damage accruing to them on account of such unlawful infringement.

And your orators say that they have sustained damages by reason of the said infringement in the sum of one hundred thousand dollars.

To the end, therefore, that the said defendant may, if it can, show why your orators should not have the relief herein prayed and may, upon its corporal oath and according to the best and utmost of its knowledge, remembrance, information, and belief, full, true, direct, and perfect answer make to all and singular the premises, and that it may be decreed to account for and pay over to your orators all gains and profits realized or which might have been realized by it, and also the damages suffered by your orators from the unlawful making, using, or vending the improvement vested in your orators as aforesaid, and may be perpetually restrained by an injunction to be issued out of this honorable court from making, using, or vending in any manner said patentee's invention, or any part thereof, in violation of the rights of your orators as aforesaid, and also that your honors, upon the rendering of the decree for an infringement as above prayed for, may proceed to assess or cause to be assessed, under your direction, in addition to the gains and profits to be accounted for by the defendant as aforesaid, the damages your orators sustained by reason of such infringement, and assessed to a sum equal to three times the amount of such assessment under the circumstances of the willful and unjust infringement by said defendant, as herein set forth.

And your orators pray also for a provisional or preliminary injunction, and that your orators may have such other or further relief as equity may require and to your honors may seem meet.

May it please your honors to grant unto your orators a writ of injunction conformable to the prayer of this bill until the further order of this court, and also a writ of subpœna, directed to the said de-

fendant and commanding it, at a certain time and under a certain penalty, to appear before your honors in this court, then and there to answer unto this bill of complaint and to abide by and perform such decree as the court shall make in the premises; and your orators will ever pray, etc.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED,
CHAS. M. FIELD, *President.*

OFFIELD & TOWLE,
Solicitors for Complainant.

THE NATIONAL DAIRY COMPANY,
By OFFIELD & TOWLE, *Their Solicitors.*

BENJAMIN F. THURSTON,
GEORGE HARDING,
ROSCOE CONKLING,
EDWARD N. DICKERSON,
Of Counsel.

11 UNITED STATES OF AMERICA, *Southern District of New York, City and County of New York,* } ss:

Charles M. Field, president of the Commercial Manufacturing Company, Consolidated, being duly affirmed, declares and says that he has heard the foregoing bill read and knows the contents thereof, and that the same is true of his own knowledge except as to the matters which are therein stated on information and belief, and as to those matters he believes the same to be true; and said deponent further says that he does verily believe that Hippolyte Mége was the original and first inventor of the new and useful improvement in treating and rendering animal fats which is described in the letters patent mentioned in the foregoing bill.

CHAS. M. FIELD, *President.*

Subscribed and affirmed to this 26th day of October, 1882, before me—

[SEAL.] V. S. LILLIE,
Notary Public, Kings County.

Certificate filed in New York county.

UNITED STATES OF AMERICA, *Southern District of Ohio,* } ss:

James D. Lehmer, being duly affirmed, declares and says that he is president of the National Dairy Company.

That the said company is the licensee, as in the said bill stated; that he has heard the foregoing bill read and knows the contents thereof, and that the same is true of his own knowledge except as to the matters which are therein stated on information and belief,

and as to those matters he believes the same to be true; and said deponent further says that he does verily believe that Hippolyte Mége was the original and first inventor of the new and useful improvement in treating and rendering animal fats which is described in the letters patent mentioned in the foregoing bill.

JAMES D. LEHMER.

Subscribed and affirmed to before me this 30th day of October, A. D. 1882.

WM. E. BROOKS,
[SEAL] *Notary Public, Hamilton County, Ohio.*

12 EXHIBIT A.

UNITED STATES PATENT OFFICE.

COMMERCIAL MANUFACTURING COMPANY, Consolidated, of New York, N. Y., assignee by mesne assignments of Hippolyte Mege, deceased.

Treating Animal Fats.

Specification forming part of Reissued Letters Patent No. 10137, dated June 13, 1882; Original No. 146,012, dated December 30, 1873; Reissue No. 5868, dated May 12, 1874; Reissue No. 8424, dated September 24, 1878; application for reissue filed May 20, 1882.

To all whom it may concern:

Be it known that Hippolyte Mége, of Paris, France, now deceased, chemist manufacturer, did invent an improved means for transforming animal fat into butter, of which the following is a specification:

This invention, which is the result of physiological investigations, consists of artificially producing the natural work which is performed by the cow when it reabsorbs its fat in order to transform the same into butter. The improved means he employed for this purpose are as follows:

I. Neutralization of the ferments.—In order to prevent the greasy substance which is settled in the tissue of the animals from taking the disagreeable taste of the fat it is necessary that the ferments which produce this taste shall be completely neutralized. For this effect, as soon as possible after the death of the animal he plunged the raw fats, called "graisses en branches," into water containing fifteen per cent. of sea salt and one per cent. of sulphite of soda. He began thus the transformation an hour at least after the immersion and twelve hours at most afterward.

II. Crushing.—A complete crushing is necessary in order
13 to obtain rapid work without alteration. For this purpose when the substance is coarsely crushed he let it fall from the cylinders under millstones, which completely bruise all the cells.

III. Concentrated digestion.—The crushed fat falls into a vessel

which is made of well-tinned iron or enameled iron or baked clay. This vessel must be plunged in a water bath of which the temperature is raised at will. When the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced. For this purpose he threw into the washtub containing the artificial gastric juice about two liters per hundred kilograms of greasy substance. This gastric juice is made with the half of a stomach of a pig or sheep, well washed, and three liters of water containing thirty grams of biphosphate of lime. After a maceration during three hours he passed the substance through a fine sieve and obtained the two liters which are necessary for a hundred kilograms. He slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate. This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter. When the liquid does not present any more lumps he threw into the said liquid one kilogram of sea salt (reduced to powder) per hundred kilograms of greasy matter. He stirred during a quarter of an hour and let it set until obtaining perfect limpidness. This method of extraction has a considerable advantage over that which has been previously essayed. The separation is well made and the organized tissues which do deposit are not altered.

IV. Crystallization in a mass.—In order to separate the oleomargarine of the stearine separated crystallizers or crystallizations at unequal temperatures have been already employed.

He contrived for this purpose the following method, which produces a very perfect separation, and is as follows: He rendered the molten fat in a vessel which must be sufficient for containing it. This vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub he put water at the fixed temperature of 86° Fahrenheit for the soft fats proceeding from the slaughter-house and 98° for the harder fats, such as mutton fat. Afterward the washtubs are covered and after a certain time, more or less long according to the fats, the stearine is deposited in the form of teats in the middle of the oleomargic liquid.

14

V. Separation by centrifugal force.—In order to avoid the numerous inconveniencies of the employment of the presses which have been hitherto used, he caused the mixture of stearine and oleomargarine to flow into a centrifugal machine called "hydro-extractor." The greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion, and the crystals of stearine are entirely exhausted without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine soft enough for rendering necessary the stroke of a press as a last operation, but in this case this operation has little importance, because it is applied only to a fraction of the product. In all cases the oleomargarine is separated from the stearine when it is cold and passed to the cylinder, constituting, especially if its yellow color

has been raised, a greasy matter of very good taste and which may replace the butter in the kitchen, where it is employed under the name of "margarine;" but if it is desired to transform it into more perfect butter he employed the following means:

VI. In the methods hitherto employed the margarine is transformed into cream and this latter into butter. This complicated operation has many inconveniencies. He obtained the same result by the following manner: He took ten liters of natural and fresh cream of milk. He added ten grams of bicarbonate of soda and two hundred grams of the udders of a cow, which must be fresh and well hacked in order to give all the mammary pepsin. The fresh udder may be replaced by udder collected in slices in sea salt. After a maceration of an hour he passed the whole through a very fine sieve. He added the necessary quantity of yellow color which is employed for the ordinary butter, and he put these ten liters into a hundred kilograms of liquid margarine at 70°. He stirred or mixed until the combination was complete—that is to say, until the pepsin had effectuated its action. At this moment the liquid becomes thick; it takes the taste of cream; and after it has been more thoroughly agitated he let the same become completely cold. When the butter was cold and solid he coarsely scraped it in order to pass it between two large cylinders, which gave it the homogeneousness and the consistence which are the qualities of the natural butter.

VII. When it is desired to produce butter intended to be preserved, which must contain no animal matter, he plunged the udders into pure water instead of cream, in order to macerate the same. Afterward the water which proceeds from this operation is mixed with the margarine at about 86° of temperature—that is to say, to a degree which permits the pepsin to effectuate its action without production of cream. After an hour he let the liquid set, and the margarine which is decanted is mixed, after it has been reduced in temperature to about 71°, with an emulsion of butter made with five liters of water, five kilograms of butter, one kilogram of sea salt or more, according to the uses, and ten kilograms of bicarbonate of soda. When he added this emulsion with the margarine, which had already been submitted to the peptic action, he obtained a rapid combination, and all the molecules take the qualities of the ordinary butter. It is a delicate operation, which must be very exactly made.

VIII. For the long conservation he only treated the magarine by the mammary pepsin, as before described. He decanted it in order to avoid any trace of water or animal matter. If it is desired to add ordinary butter he did that at a temperature of 71° by well diluting it.

IX. The stearine which has been separated from the margarine forms a hard fat, which can be bleached by the known processes in order to produce wax candles of lower quality, but it is preferable to saponify it by any convenient process and crystallize the greasy acids (which are charged with from seventy to eighty per cent. of stearic acid instead of fifty) in a chamber heated to 96°, so as not to let

them became hard by the cooling. In this state they can be pressed under heat in order to produce stearic acid much superior to that of the trade, both by its beauty and by its point of melting.

16 What is claimed is—

1. The improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or without the addition of substances to change the flavor, consistency, or color, as set forth.

2. The process herein described of treating animal fats in the production of oleomargarine.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED. [L. S.]
CHAS. M. FIELD, *President.*

Witnesses:
GEO. H. SONNEBORN.
WM. H. SONNEBORN.

Endorsed: Filed Dec. 11, 1882. Wm. H. Bradley, clerk.

17 On the same day, to wit, on the eleventh day of December, 1882, there issued out of said clerk's office a writ of subpœna in said entitled cause; which said writ together with the return of the marshal thereto attached are in the words and figures following, to wit:

18 UNITED STATES OF AMERICA, *Northern District of Illinois,* } ss:

The United States of America to Fairbank Canning Company, a corporation, etc., Greeting:

We command you that you appear before our judges of our circuit court of the United States of America for the northern district of Illinois, at Chicago, in said district, on the first Monday in the month of January next, to answer the bill of complaint of the Commercial Manufacturing Company, Consolidated and the National Dairy Company, this day filed in the clerk's office of said court, in said city of Chicago, then and there to receive and abide by such judgment and decree as shall then or thereafter be made, upon pain of judgment being pronounced against you by default.

To the marshal of the northern district of Illinois to execute.

Witness the Hon. Morrison R. Waite, Chief Justice of the Supreme Court of the United States of America, at Chicago aforesaid, this 11th day of December, in the year of our Lord one thousand eight hundred and eighty-two, and of our Independence the 107th year. [SEAL.]

W. H. BRADLEY, *Clerk.*

Memorandum.

The above-named defendant is notified that unless it shall enter its appearance in the clerk's office of said court, at Chicago afore-

said, on or before the day to which the above writ is returnable the the complainant's bill will be taken against it as confessed and a decree entered accordingly.

W. H. BRADLEY, *Clerk.*

19 *Special Deputy's Return.*

UNITED STATES OF AMERICA, *Northern District of Illinois,* } ss:

Know all men by these presents that I have appointed and by these presents do appoint Henry R. Baldwin my true and lawful deputy to execute the annexed writ — Commercial Mf., *ect., et al. vs.* Fairbank Canning Co., and to make return of the execution thereof according to law.

A. M. JONES, [SEAL.]
U. S. Marshal for the Northern District of Illinois.

I have served the annexed writ in the following manner, to wit, by delivering a copy to Frank E. Vogel, secretary of Fairbank Canning Company, a corporation, etc., on Dec. 11th, A. D. 1882.

I did not serve —— ——, the other defendant therein named, being unable to find — within my district.

A. M. JONES,
United States Marshal,
By HENRY R. BALDWIN,
Special Deputy.

Marshal's fees:

1 copy	$ 50
1 mile	06
1 service	2 00
Oath and certificate of service	25
	$2 61

UNITED STATES OF AMERICA, *Northern District of Illinois,* } ss:

Henry R. Baldwin, being duly sworn, deposes and says that he served the annexed writ as stated in the foregoing return, and that the expense returned by him, in addition to the fees, was actually incurred, and that the same is according to law.

HENRY R. BALDWIN.

Subscribed and sworn to before me this 11th day of Dec., A. D. 1882.

SAMUEL C. HAYES,
[SEAL.] *Notary Public.*

(Endorsed:) Filed Dec. 13th, A. D. 1882. Wm. H. Bradley, clerk.

20 Afterwards, to wit, on the fifth day of February, 1883, in the December term of said court, 1882, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

On motion, the time to answer herein is hereby extended to the first day of March next.

21 Afterwards, to wit, on the nineteenth day of February, A. D. 1883, in the December term of said court, 1882, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

Now come the parties, by their solicitors; and, the defendant having heretofore moved for leave to file a cross-bill herein and the court having considered the same, overrules said motion.

On the same day, to wit, on the 19th day of February, 1883, came the defendant, by its solicitors, and filed in said clerk's office its answer in said entitled cause; which said answer is in the words and figures following, to wit:

22 *Answer.*

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY COMPANY
vs.
FAIRBANK CANNING COMPANY. } In Equity.

The answer of The Fairbank Canning Company, defendant, to the bill of complaint of The Commercial Manufacturing Company, Consolidated, and The National Dairy Company, complainants.

To the honorable the judges of said court:

1. This defendant, now and at all times hereafter saving and reserving to itself all and all manner of benefit or advantage, by way of exception or otherwise, which can or may be had or taken to said complainants' bill of complaint on account of the many errors, uncertainties, imperfections, and insufficiencies therein contained, for answer thereunto or to so much and such parts thereof as this defendant is advised it is material or necessary for them to make answer unto, answering, says—

2. That this defendant has no knowledge, information, or belief as to whether the complainant, The Commercial Manufacturing Company, Consolidated, is organized or operating under and by virtue of the laws of the State of New York, or as to whether the complainant, The National Dairy Company, is organized or operating under and by virtue of the laws of the State of Ohio, or that they are, respectively, citizens of said several States, save from the allegations and statements in that regard contained in said bill of complaint, and does not admit that the said complainants, or either of them, are corporations organized or operating as alleged, and therefore prays that said complainants may be required to make due proof thereof in this cause.

3. And this defendant, further answering, denies, upon in-
23 formation and belief, that the said Hippolyte Mége made the discovery "that when animal fat is rendered at a low temperature—considerably below that employed in the ordinary rendering of fat in the manufacture of tallow—it has the taste of molten butter; and, not having that peculiarly disagreeable flavor which characterizes tallow, it is a palatable and healthful article of food, having the properties and qualities of butter obtained from milk elaborated by natural processes from fat through the cellular tissue by the cow," or that said alleged discovery of the said Mége was publicly announced to the world in scientific publications and otherwise, or that the merit of said alleged discovery has without qualification been conceded to the said Mége.

And this defendant, further answering, denies that the said Hippolyte Mége made application for letters patent of the United States for said alleged improvement, invention, or discovery, or that letters patent of the United States were issued to him therefor. This defendant admits that said letters patent of the United States No. 146,012, dated the thirtieth day of December, A. D. 1873, were issued on that date to the said Mége, but this defendant alleges that said letters patent were for another and wholly different alleged improvement, invention, or discovery from that set forth in said bill of complaint, to wit, for the process of transforming animal fat into butter by subjecting raw fats to the action of gastric juice in an artificial or concentrated digestion conducted at the animal temperature, "so that the heat does not exceed 103 degrees Fahrenheit," and below the temperature at which the animal membrane and tissue can be separated from the fat by heat in rendering, and whereby the digested fat should "have the taste of molten butter," together with subsequent steps in the process of treatment not mentioned in said bill of complaint, but all of which is set forth at length in the specification of said letters patent.

4. And this defendant, further answering, says that it has no knowledge, information, or belief as to the said several assignments and each of them of the several letters patent or of the license in said bill of complaint mentioned save from the allegations and state-
ments in that regard contained in said bill of complaint, and
24 does not admit that the same or either of them were made

as alleged, and leaves the complainants to make proof thereof as they may be advised.

5. And this defendant, further answering, says that it is informed and believes it to be true that said letters patent No. 146,012 were surrendered to the Commissioner of Patents by the said Hippolyte Mége by and with the consent of the said The United States Dairy Company, and that the same were canceled; and this defendant, upon information and belief, alleges that at the time of such surrender the said The United States Dairy Company filed with the Commissioner of Patents the affidavit of the said Hippolyte Mége setting forth that said letters patent were inoperative or invalid by reason of an insufficient or defective specification; wherefore such proceedings were had that the said The United States Dairy Company obtained said reissued letters patent No. 5868. This defendant further alleges that the specification of said reissued letters patent No. 10137, upon which this suit is based, is identical in all respects with the specification of said original letters patent No. 146,012, except the unimportant grammatical changes of phraseology resulting from the substitution of the personal pronouns by reason of the death of said Mége.

Therefore this defendant insists and charges that the complainants are estopped from claiming or asserting that said reissued letters patent 10137 are operative or valid and from claiming or asserting any rights thereunder, and by reason of the foregoing acts of the parties under and through whom they hold title to said letters patent, as well as by the allegations in said bill contained, that said letters patent No. 146,012 were inoperative or invalid.

6. And this defendant, further answering, alleges, upon information and belief, that both prior and subsequent to the granting and issue of said letters patent No. 146,012 many persons and corporations in various parts of the United States were largely engaged in the manufacture and sale of what is popularly known as "oleomargarine oil," and that this article was manufactured by them by a process essentially different from the process set forth in said letters patent No. 146,012, and was also a different product from that described in said letters patent, neither said process nor said product being an infringement upon said letters patent, and that the said The United States Dairy Company, well knowing of such manufacture and sale, and with the unlawful purpose and fraudulent intent of enlarging the scope of said letters patent and expanding the same so as to cover and embrace said manufacture and sale, although another and different invention, surrendered the said letters patent and procured said reissued letters patent No. 5868, and in like manner and under like circumstances and with the same unlawful purpose and fraudulent intent surrendered said reissued letters patent No. 5868 and procured said reissued letters patent No. 8424, and in each and both cases, not for the purpose of correcting any error in the specification of said original letters patent No. 146,012, but for the unlawful purpose of covering and suppressing the manufacture and sale above referred to; and this defendant alleges that said reissued letters patent Nos. 5868 and

8424, both and each of them, were invalid and void, because they were for a different invention from that embraced or covered in said original letters patent No. 146,012; and this defendant further alleges that both and each of said reissued letters patent were invalid by reason of errors which had not arisen by inadvertence, accident, or mistake and without any fraudulent or deceptive intention; wherefore this defendant alleges and charges that said last reissued letters patent, No. 10137, upon which this suit is based, were procured and issued without warrant or authority in law and in violation of law, and that said last-mentioned letters patent are wholly invalid and void.

7. And this defendant, further answering, and as a further defense to said bill of complaint, says, upon information and belief, that the same alleged invention of Hippolyte Mége, for which said letters patent No. 146,012 were granted and issued under date of December 30, A. D. 1873, to said Hippolyte Mége, as in said bill of complaint set forth, for the term of seventeen years from the said 30th day of December, A. D. 1873, upon an application filed in the United States Patent Office by the said Mége November 1,
26 A. D. 1873, had, previously to said 30th day of December, 1873, been patented by the said Hippolyte Mége in certain foreign countries, to wit: In France, by letters patent of France numbered 36480, granted and issued under date of July 15, A. D. 1869, for the term of fifteen years from the said 15th day of July, A. D. 1869.

In Great Britain, by English letters patent numbered 2157, granted and issued under date of July 17, A. D. 1869, for the term of fourteen years from the said 17th day of July, A. D. 1869.

In the Kingdom of Bavaria, by letters patent of such kingdom numbered 1217, granted and issued under date of April 8, A. D. 1873, for the term of two years from the said 8th day of April, A. D. 1873, which said last-mentioned patent was renewed for the term of one year from April 8, A. D. 1875, and then terminated, there being no further renewals of the same.

In the Empire of Austria, by letters patent numbered 600, granted and issued under date of October 31, A. D. 1869, for the term of one year from the said 31st day of October, A. D. 1869.

In the Kingdom of Italy, by letters patent numbered 91, granted and issued under date of May 27, A. D. 1872, for the term of fifteen years from the said 27th day of May, A. D. 1872.

In Belgium, by letters patent granted and issued under date of July 31, 1869, for the term of — years from the said 31st day of July, A. D. 1869.

Wherefore this defendant alleges and charges that said letters patent of the United States No. 146,012, granted and issued to the said Hippolyte Mége under date of December 30, A. D. 1873, for the term of seventeen years from the said 30th day of December, A. D. 1873, and said reissued letters patent No. 10137, granted and issued under date of June 13th, A. D. 1882, for the unexpired part of the term of seventeen years from the said 30th day of December, A. D. 1873, the date of said original patent, as alleged in said bill of com-

plaint, were and are null and void by reason of the fact that the said alleged invention having been first patented in foreign countries as aforesaid said letters patent of the United States should
27 have been so limited as to expire at the same time with the foreign patent having the shortest term, and that the said letters patent granted as aforesaid for a term not so limited and without reference to said foreign letters patent were so granted and issued without warrant and authority in law and in contravention of the statutes in such case made and provided, to wit, the Revised Statutes of the United States, title LX, section 4887, and were and are null and void.

8. And this defendant, further answering, alleges and charges that by reason of the expiration of the said Bavarian letters patent and by reason of the expiration of said Austrian letters patent above referred to the said several letters patent of the United States mentioned and referred to in said bill of complaint have long since expired and ceased to be in force and effect, and in particular that said reissued letters patent No. 10137 are invalid, null, and void because of the expiration of the said original letters patent and of the said first reissues thereof long prior to the granting and issue of said reissued letters patent No. 10137 and by reason of the expiration of said foreign patents as aforesaid.

9. And this defendant, further answering, and as a further defense to said bill of complaint, avers, upon information and belief, that the description of said invention filed in the Patent Office and set forth in the specification of said reissued letters patent No. 10137 is not in such full, clear, and exact terms as to enable any person skilled in the art of science to which it appertains or with which it is most nearly connected to make, compound, and use the same or to successfully conduct the process indicated; but, on the contrary, this defendant avers, upon information and belief, that the said specification and the alleged invention therein set forth is wholly inoperative, and that the process therein described, if conducted in accordance with the directions therein set forth, will not effect a separation of the animal membrane and tissue from the fat, which separation is one of the principal steps and one of the main objects of the alleged process; wherefore this defendant alleges and charges that the said reissued letters patent No. 10137 are invalid, inoperative, null, and void.

10. And this defendant, further answering, and as a further
28 defense to said bill of complaint, avers, upon information and belief, that the said Hippolyte Mége was not the original and first inventor or discoverer of the alleged invention set forth and claimed as new in said reissued letters patent No. 10137, but that anterior and long prior to the supposed invention or discovery thereof by the said Mége the thing patented or substantial and material parts of the thing patented or claimed as new in said reissued letters patent No. 10137 had been patented or described in the following English letters patent, to wit:

No. 1174, dated December 16, 1777, to Thomas Forrest.

No. 5354, dated March 20, 1826, to Nicholas Hegesippe Manicler.

No. 7184, dated September 15, 1836, to John F. William Hemple and Henry Blurdel.

No. 5183, dated June 9, 1835, to Moses Poole.

No. 11474, dated October 15, 1846, to William Palmer.

No. 12077, dated February 28, 1848, to William Palmer.

No. 8500, dated May 9, 1845, to Miler Berry.

No. 10127, dated March 28, 1844, to Robert Mollett and Jesse Bridsmon.

No. 12501, dated February 28, 1848, to George F. Wilson.

No. 11036, dated January 13, 1846, to Jean Marie Durnerin.

No. 619, dated November 2, 1852, to George F. Wilson.

No. 982, dated April 19, 1860 (provisional protection), to Benjamin Harben and Richard Isaac.

No. 2817, dated December 13, 1863 (provisional protection), to James Murdock.

No. 2445, dated October 27, 1800, to —— Binns.

Also in the following letters patent of the United States, to wit:

No. 120,026, dated October 17, 1871, to Henry W. Bradley.

No. 121,161, dated November 28, 1871, to Leo Louis Amie Elie Pecat de la Peyrouse.

29 No. 137,564, dated April 8, 1873, to Alfred Paraf (assignor).

No. 145,840, dated December 23, 1873, to Joseph R. Brown (assignor).

No. 148,767, dated March 17, 1874, to Budd Smith.

No. 153,999, dated August 11, 1874, to William E. Andrews, and reissue thereof, No. 6737, November 16, 1875.

No. 154,251, dated August 18, 1874, to John Hobbs.

No. 154,272, dated August 25, 1874, to William L. Churchill and Jacob L. Englehart (assignors).

No. 155,816, dated October 13, 1874, to George B. Van Brunt (assignor).

No. 166,955, dated August 24, 1875, to William E. Andrews.

No. 169,008, dated October 19, 1875, to James P. Kennedy.

No. 172,942, dated February 1, 1876, to William E. Andrews.

No. 179,883, dated July 18, 1876, to William E. Andrews.

No. 188,428, dated March 13, 1877, to A. Smith.

No. 188,429, dated March 13, 1877, to A. Smith and L. Smith.

No. 187,327, dated February 13, 1877, to A. Springer.

No. 195,297, dated September 18, 1877, to T. Mayer.

No. 189,541, dated April 10, 1877, to William E. Andrews.

11. And this defendant, further answering, and as a further defense to said bill of complaint, avers, upon information and belief, that the alleged invention or improvement set forth and claimed in said reissued letters patent No. 10137 or substantial and material parts thereof claimed as new had been long prior to the alleged invention or discovery thereof by the said Mége described in the following printed publications, to wit:

In Musprats' Chemistry, vol. I, pp. 413, 414, Figs. 255 and 256; also, same work, vol. II, pp. 625 and 626.

In Chevrent's Historie des Comaissance Chemique, published in Paris in 1868, p. —.

In Cent Traites, published in Paris in 1855, vol. 1, p. 450.

30 In Traite de Chemie appleque auxarts, edited by Jean Baptiste Dumas, published in Paris 1828 and again 1846.

In a work published by A. S. Hassels, entitled "Adulterations Detected in Food and Medicine," 2d edition, published in London in 1860, pp. 297 to 300.

In Thompson's Chemistry of Animal Bodies, under the head of Ox Fat, p. 135.

In Morfit's Perfumery; its Manufacture and Uses, published in London in 1856, 2nd edition, p. 448.

In A. J. Cowley's Cyclopædia of Practical Receipts, published in London in 1862, 2d edition, p. 448.

In Morfit's Perfumery, Pomades, and Practical Chemistry, published by Patterson in Philadelphia, Pa., in 1853.

In Watt's Dictionary, article "Glyceroide," vol. 2, p. 848, published in London in 1868.

In Dictionary of Arts, Manufactures, and Mines, by Andrew Ure, M. D., published in New York in 1862, Appleton's edition, vol. 5, article "Suet," and vol. 1, p. 607.

In Ure's Dictionary, vol. 2, p. 712, article "Stearine Cold Press;" also same volume, pp. 280, 282, 287, article "Oils;" also same work, vol. 3, p. 815, article "Oils;" p. 828, article "Tallow Oil;" p. 828, "Lard Oil;" also Ure's Dictionary of Chemistry, article "Butter."

In Encyclopædia of Chemistry, by James E. Booth, published in Philadelphia in 1850, p. 904, article "Tallow."

In Parnell's Applied Chemistry, published in London in 1844, vol. 2, p. 309, article "Tallow."

In Henry Watt's Dictionary of Chemistry, published in London by Longemons Gruncleo 1865 and 1869, vol. 5, p. 657, article "Tallow."

In Chevrent's Recherches Surles corps gras d' origine animale, published in Paris in 1823.

In Broode's Manual of Chemistry, vol. 2, p. 1264.

In a System of Chemistry by J. Murray, 2d edition, Edinburgh, 1809, vol. 4, p. 699.

31 In Manual of Chemistry, by Wm. Thomas Broode, London, John W. Porter, 1836, part III, pp. 1185 and 1186, pp. 1151 and 1152, vol. 2, p. 1284.

In a Manual of Chemistry, by Wm. Thomas Broode, London, John Murray, 1819, "Butter," p. 437 and pp. 453 and 454.

In the Engineers' and Mechanics' Encyclopædia, etc., by Luke Herbert, London, Thomas Kelly, 1820, vol. 1, p. 305.

In A General System of Chemical Knowledge, etc., by A. B. Tourerdy, translated by Wm. Nicholson, London, 1804, vol. 9, pp. 243 and 244.

In Perfumery; its Manufacture and Uses, etc., by Campbell Morfit, Philadelphia, 1853, pp. 74, 75, 84, 85, 86, 87, 88, 89.

In the Elements of Experimental Chemistry, by William Henry, M. D., Philadelphia, 1831, vol. 2, p. 345.

In Chemical News, London, 1861, December 21, vol. 4, p. 323, and vol. 3, p. 104; also vol. 13, p. 156, March 30, 1866.

In Mechanics' Magazine, London, 1825, vol. 3, p. 96.

In Artists' Manual, by James Calbash, Philadelphia, 1814, article Oils, Animals, Fats.

In Chemical Technology, etc., by D. F. Knapp, translated by E. Reynolds and Thomas Richardson, Philadelphia, 1848, vol. 1, pp. 119, 123, and 125.

In a Dispensary and Commentary on the Pharmacopœias of Great Britain and the United States, by Rob't Christian, M. D., etc., Philadelphia, 1848, pp. 268, 269.

In Ure's Dictionary, 1868, vol. 1, p. 355.

In Appleton's Dictionary of Mechanics, 1852, vol. 1, p. 218.

In Report on the Paris Exposition of 1867, vol. 2, p. 122, J. L. Smith.

In Mechanics' Magazine, 1852, vol. 56, p. 243.

In Traite de Chemie Applique aux Arts, per M. Dumas, Paris, 1843, vol. 6, pp. 668, 669, 670, 671, 678, 679.

In Traite Elementaire de Chemie Arganique, per M. Berthlot, Paris, 1872, pp. 284, 298, and 453, 458.

In a Manual of Chemistry of the Carbon Compounds, by A. Schaylimnmer, F. R. S., London, 1872, p. 172; 1873, p. 174.

32 In the English Encyclopædia, London, 1861, Arts and Sciences, vol. 6, p. 28.

In a complete Treatise on Perfumery, etc., by Prof. H. Jussance, Philadelphia, 1864, pp. 62, 65.

In Chemistry Applied to the Manufacture of Soaps and Candles, by C. Morfit, Philadelphia, 1847, pp. 326, 340.

In Guide Practical da Parfumerie, par D. A. D. Lunel, Paris, 1864.

In a Dictionary of Chemistry, Mineralogy, and Geology, by James Mitchell, London, 1823, p. 106.

In Dingler, vol. 59, p. 320, 1836, Rancid Butter made Fresh by Washing with Milk.

In Dingler, 1848, vol. 107, p. 294, mutton and beef fat added to increase its hardness.

In Dingler, vol. 116, p. 112.

In Polytechnisches Central Blatt, 1855, p. 937.

In the American Chemist, published in Philadelphia, in April, 1873.

In the Cyclopedia or Universal Dictionary of Arts, Sciences, and Literature, by Abraham Rees, published in London in 1819, Longmon Hurst, Rees, Orme & Brown, Paternoster row, vol. 34, article "Suet."

In the Edinburgh Encyclopedia, conducted by David Brewster, first American edition, Philadelphia, published by J. & E. Porter in 1832, vol. 5, p. 777, article "Chemistry—Fat."

In the London Encyclopedia, published in London in 1829, by Thomas Flagg, vol. 21, pp. 355, 356, article "Suet."

In A System of Chemistry, by Thomas Thompson, Philadelphia, 1818, published by A. Small, vol. 4, p. 335.

In Guido Practique du Parfeumer Dictionaire des Cosmetiques et Perfumes, by Adolph Beuestor Lannel, edited by Eugene Lecroix, published in Paris, France, 1864.

In Griffith's Dispensatory, Philadelphia, 1848, pp. 268, 269, and 872.

12. And this defendant, further answering and as a further defense to said bill of complaint, avers, upon information and belief, that the alleged invention set forth and claimed in said reissued letters patent No. 10137, or substantial and material parts thereof, was or were in public use and on sale throughout the United
33 States at the time of and for more than two years prior to the application for said reissued letters patent last mentioned, and at the time of and for more than two years prior to the application for said original letters patent No. 146,012, and that such use was known to and had by the following-named persons, of the following-named residences, and at the following-named places:

By Allen Hay, of the city of New York, State of New York, at his "fat-rendering establishment" on First avenue, in said city.

By James Pyle, of the city of New York, State of New York, at said city of New York.

By Charles D. Moulton, of the city of Brooklyn, State of New York, at said city of Brooklyn.

By Henry W. Bradley, of Plainfield, New Jersey, at Plainfield aforesaid.

By Thomas Dunning, of Rye, Westchester county, New York, at New York city.

By James S. Thayer, of Rahway, New Jersey, at Rahway aforesaid.

By William Reynolds, of Rye, Westchester county, New York, at New York city.

By John E. Bass, of the city of Brooklyn, State of New York, at said Brooklyn.

By Cook Brothers & McCord, of Thirty-eighth street, New York city aforesaid, at said city.

By the Manhattan Oil Company, its officers and agents, of New York city aforesaid, at said New York city.

By Charles Fitch, of Maiden Lane, New York city aforesaid, at said city.

By Prof. Taite, of Jersey City, State of New Jersey, at said Jersey City.

By L. D. Hibbard, of Tenth street, Long Island City, State of New York, at said city.

By John Reardon & Sons, of Cambridge, in the State of Massachusetts, at said Cambridge.

By Frederick Jackson, of Brighton, State of Massachusetts, at said Brighton.

By Henry Eisner, of New York city aforesaid, at said city and elsewhere.

By Mrs. B. Davis, of Chicago, State of Illinois, at Bloomington, Ill.

34 By Mrs. John Haggard, of Bloomington, Ill., at Bloomington, Ill.

By Mrs. Dr. Butterfield, of Ogden, Utah, at Bloomington, Ill.

By Benjamin V. Page, of the city of Chicago, Ill., at Chicago aforesaid.

By William Sprague, of the city of Chicago, Ill., at Chicago aforesaid.

By N. K. Fairbank, of the city of Chicago, Ill., at Chicago aforesaid.

By Herbert F. Deane, of the town of Lake, Cook county, Ill., at the city of New York aforesaid.

13. And this defendant, further answering, denies that the said Hippolyte Mége, the said patentee, and those acting under him, have brought the invention patented in said reissued letters patent No. 10137 into public use in various parts of the country, but, on the contrary, this defendant avers, upon information and belief, that the complainants have not worked and do not work the process set forth in said letters patent, the same being inoperative as aforesaid, but employ processes and means wholly different from those set forth and described in said letters patent.

14. And this defendant, further answering, denies that it has infringed or is infringing said reissued letters patent No. 10137, at Chicago or elsewhere in the United States, by making, using, or vending to others to be used the improved material described in said reissued letters patent No. 10137, produced by treating animal fats so as to remove the tissues and other portions named in the specification of said patent, with or without the addition of substances to change the flavor, consistency, or color, as set forth in said patent, or by practicing the process described in said patent. This defendant admits that it is engaged in the business of rendering fat and pressing the oil therefrom, but this is done by the use of old and well-known methods, and neither by the process nor with the resulting product set forth and claimed in said reissued letters patent No. 10137.

15. And this defendant, further answering, denies that the complainants have sustained damages, by reason of any act of this
35 defendant, in the sum of $100,000 or in any sum whatever, and this defendant denies that the complainants are entitled to the relief prayed for in said bill of complaint.

16. Without this, that there is any other matter or thing in said complainants' bill of complaint contained material or necessary to make answer unto and not herein and hereby well and sufficiently answered, traversed, confessed and avoided, or denied is true to the knowledge or belief of this defendant.

All which this defendant is willing to aver, maintain, and prove as this honorable court shall direct, and humbly prays to be hence dismissed with his reasonable costs and charges most wrongfully sustained.

[CORPORATE SEAL.] FAIRBANK CANNING CO.,
By NATHANIEL K. FAIRBANK,
President.

HILL & DIXON,
Solicitors for Def't.

L. HILL,
T. S. E. DIXON,
Of Counsel.

STATE OF ILLINOIS, } ss:
Cook County, }

N. K. Fairbank, being duly sworn, deposes and says that he is president of the defendant corporation, The Fairbank Canning Company, above named, and that he has read the foregoing answer and knows the contents thereof, and that the same is true of his own knowledge except as to matters which are therein contained stated on information and belief, and as to those matters he believes them to be true.

NATHANIEL K. FAIRBANK.

Subscribed and sworn to before me this 17th day of February, A. D. 1883.

[SEAL.] EDWIN L. THURSTON,
Notary Public.

Endorsed: Filed Feb. 19, 1883. Wm. H. Bradley, clerk.

36 Afterwards, to wit, on the fifth day of May, 1883, came the complainants, by their solicitors, and filed in said clerk's office their replication to the answer of the defendant in said entitled cause; which said replication is in the words and figures following, to wit:

37 *Replication.*

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY COMPANY *vs.* FAIRBANK CANNING COMPANY. } In Chancery.

The replication of The Commercial Manufacturing Company, Consolidated, and The National Dairy Company, complainants, to the answer of Fairbank Canning Company, defendants.

These repliants, saving and reserving unto themselves now and at all times hereafter all and all manner of benefit and advantage of exception which may be had or taken to the manifold insufficiencies of the said answer, for replication thereunto say that they will
38 aver, maintain, and prove their said bill of complaint to be true, certain, and sufficient in law to be answered unto, and that the said answer of the said defendants is uncertain, untrue, and insufficient to be replied unto by these repliants, without this, that any other matter or thing whatsoever in said answer contained material or effectual in the law to be replied unto and not herein and hereby well and sufficiently replied unto, confessed and avoided, traversed or denied, is true; all of which matters and things these repliants are and will be ready to aver, maintain, and prove as this

honorable court shall direct, and humbly pray as in and by their said bill they have already prayed.

OFFIELD & TOWLE,
Complainants' Solicitors.

(Endorsed:) Filed Mar. 5, 1883. W. H. Bradley, clerk.

39 Afterwards, to wit, on the eighteenth day of February, 1884, in the December term of said court, 1883, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

THE COMMERCIAL MANUFACTURING COMPANY *et al.*
vs.
FAIRBANKS CANNING COMPANY. } In Chancery.

Now come the parties, by their solicitors, and the complainants, by their solicitor, move the court to set this cause for hearing, and the defendant, by its solicitor, moves to extend the time for closing the proof herein; and, after hearing the arguments of counsel, the court overrules said motion to set for hearing and sustains said motion to extend time.

It is thereupon ordered that the time in which the defendant is to close its proofs herein be extended to the first day of June next, and that the complainants have twenty-five days thereafter in which to take rebutting evidence.

40 Afterwards, to wit, on the third day of May, in the adjourned March term of said court, 1884, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
THE FAIRBANK CANNING COMPANY. } In Chancery.

On motion of the defendant and upon affidavit filed, it is ordered that the defendant's time to close its proofs herein be extended to the first day of August, A. D. 1884, and that complainants have uutil September first, 1884, to close their proofs.

41 Afterwards, to wit, on the eleventh day of July, in the July term of said court, 1885, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

On motion, leave is hereby given the defendant to take further proofs herein, the same to be taken between the first and fifteenth

days of September next, and it is ordered that said proofs be taken at the expense of the defendant, without regard to the result of this suit. Leave is also given said complainants to take further proof in rebuttal by the first day of October next.

42 Afterwards, to wit, on the twelfth day of January, 1886, in the December term of said court, 1885, in the record of the proceedings thereof in said entitled cause, before Hon. Walter Q. Gresham, circuit judge, and Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
v.
FAIRBANK CANNING COMPANY. } In Chancery.

Now come the parties, by their solicitors, and, this being set for hearing this day upon pleadings and proofs, now comes on to be heard, and, after hearing arguments of counsel in part, it is ordered that further hearing herein be postponed until to-morrow morning.

43 Afterwards, to wit, on the thirteenth day of January, 1886, in the December term of said court, 1885, in the record of the proceedings thereof in said entitled cause, before Hon. Walter Q. Gresham, circuit judge, and Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
v.
FAIRBANK CANNING COMPANY. } In Chancery.

Now again come the parties herein, by their solicitors, and this cause again comes on to be heard upon the pleadings and proofs, and, after hearing additional arguments of counsel without reaching a conclusion, it is ordered that further hearing herein be postponed until to-morrow morning.

44 Afterwards, to wit, on the fourteenth day of January, 1886, in the December term of said court, 1885, in the record of the proceedings thereof in said entitled cause, before Hon. Walter Q. Gresham, circuit judge, and Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
v.
FAIRBANK CANNING COMPANY. } In Chancery.

Now again come the parties herein, by their solicitors, and this cause again comes on to be heard upon the pleadings and proofs,

and, after hearing additional arguments of counsel without reaching a conclusion, it is ordered that further hearing herein be postponed until to-morrow morning.

45 Afterwards, to wit, on the fifteenth day of January, 1886, in the December term of said court, 1885, in the record of the proceedings thereof in said entitled cause, before Hon. Walter Q. Gresham, circuit judge, and Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
v.
FAIRBANK CANNING COMPANY. } In Chancery.

Now again come the parties, by their solicitors, and this cause again comes on to be heard upon the pleadings and proofs, and, after hearing the concluding arguments of counsel, the court takes the same under advisement.

Afterwards, to wit, on the twenty-second day of March, 1886, the following opinion of Judges Gresham and Blodgett was filed in said clerk's office; which said opinion is in the words and figures following, to wit:

46 THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, and THE NATIONAL DAIRY CO.
v.
FAIRBANK CANNING COMPANY.

Before Gresham, C. J., & Blodgett, D. J.

This suit is brought for an alleged violation of reissued patent No. 10137, granted June 13, 1882, to complainant, assignee of Hippolyte Mege, for "an improved method of treating animal fats," the original patent having been granted December 30, 1873, and reissued May 12, 1874, and again reissued September 24, 1878, before the reissue now in question.

By the specifications it is claimed that Mege invented an improved means for transforming animal fat into butter, the process described resulting in artificially producing the natural work which is performed by the cow when it re-absorbs its fat in order to transform the same into butter. His process included nine steps, the first five of which only are in controversy in this case. Briefly stated, these steps are as follows:

1. Neutralization of the ferments or germs of decay, which is done by plunging the suet or raw fat, as soon as possible after the death of the animal, into water containing 15 per cent. of sea salt and 1 per cent. of sulphite of soda, where it was to remain not less than one hour nor more than twelve hours.

2. The raw fat or suet is then completely crushed by passing it

between cylinders, and from them under millstones, which
47 completely bruises all the cells. This crushed fat is then placed in a vessel of well-tinned or enameled iron or baked clay, and this vessel placed in a water bath. To about 100 kilogrammes of fat there are added two liters of artificial gastric juice, made by macerating for three hours half the stomach, well washed, of a pig or sheep, with three liters of water and thirty grams of biphosphate of lime. The temperature of the mass of fat and gastric juice thus contained in the vessel is then slowly raised to about 103° Fahrenheit (which is about the temperature of the stomach of domestic animals), from which the fats are obtained, and kept at that heat until the fatty matter is completely separated from the tissue in which it is held. When this is accomplished about one kilogramme of powdered sea salt is added to each hundred kilogrammes of fat, and the mass thoroughly stirred for about one-quarter of an hour, when the clear fat is drawn off. The fat thus drawn off must not have any taste of fat, but, on the contrary, must have the taste of molten butter.

4. The molten fat thus obtained is placed in a vessel and this vessel placed in a water bath, where it is surrounded by water, which is kept at a fixed temperature of 86° F. for the soft fats or 98° F. for the harder fats, such as mutton fats, where the vessel remains until the stearine of this molten fat is crystallized or deposited in the form of teats in the middle of the liquid mass. The stearine having become hardened or crystallized, the oleomargarine remains mized with it in a liquid or semi-liquid condition. The mass is then placed
in a centrifugal machine or hydro-extractor and the machine
48 set in motion. The liquid oleomargarine is thrown off by the centrifugal force, while the hard stearine is retained in the cloths. A press may also be used for the purpose of separating the oil from the stearine, especially if the fat used is very soft.

The patentee says the product of these steps in the process is a greasy matter of very good taste, which may replace the butter in the kitchen, where it is employed under the name of margarine, but that it may be transformed into more perfect butter by subsequent steps, which he describes, such as making the oil into an emulsion with a certain quantity of fresh cream and pepsin obtained from the mammary glands of a cow, but as this part of the process is not now in question it is needless to give it in further detail.

The claims of the patent are:

1. The improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or without the additions of substances to change the flavor, consistency, or color, as set forth.

2. The process herein described of treating animal fats in the production of oleomargarine, the claims of the present reissue being substantially the same as those of the original patent—that is, after two reissues, in which different claims were made from those of the original patent, the owners of the patent have by this reissue gone back to the original claims.

The defenses interposed are:

I. That the patent had expired before the last reissue thereof by reason of the expiration of certain foreign patents granted to Mege for the same invention.

49 II. That the present reissue, if it has not expired, is otherwise invalid because of the surrender of the original patent and taking two reissues, with new and different claims, on the ground that the original was defective and did not describe the invention, and that the patentees are now estopped from returning to the original specifications and claims as their patent.

III. That the defendants do not infringe the process described in the reissued patent.

It is conceded that Mege, who was a scientist of much merit and repute in France, comes years before the application for his patent in this country, set about a series of experiments for the purpose of obtaining a healthful and yet cheaper fat for the use of working people in that country in the place of the poor butter then used by them or to take the place of butter, which they were not able to buy, and as the result of such experiments he discovered that the fat of beef animals and the fat of butter were substantially identical.

Of the utility of Mege's discovery Professor Henry Morton, president of the Stevens Institute of Technology of New Jersey, whose testimony is found in the record, says:

"There is, of course, a difference in the improved product described and claimed in the Mege patent, according as it is made with or without the addition of materials affecting its color, consistency, and flavor. I will therefore refer to each of these conditions separately. When the improved product of Mege, without these additions referred to, is compared with ordinary dairy butter we find it to be substantially identical therewith as regards its main

50 constituents and its general consistency and character; both products, then, consist substantially of mixtures in nearly the same proportions in either case of stearine, margarine, and oleine, and both are unctuous solids, varying in consistency, being quite solid near the melting point of ice, quite fluid at a temperature of about 90, and more or less soft and plastic at intermediate temperatures. The Mege product, however, differs from dairy butter, in the first place, as to its composition by reason of the presence in the dairy butter of several substances not found in the Mege product. Thus the dairy butter contains about five per cent. to six per cent. of the peculiar fat known as butyrine; it also contains a smaller amount of caseine, some trace of albumen; also extremely minute quantities — caprilin, caproilin, and caprylin. None of these substances would be present in the Mege product as above referred to, which would therefore lack peculiar flavor due to the presence of these products. The amount of water and salt would also, as a rule, be greater in dairy butter than in the Mege products. There would also be a difference in consistency, inasmuch as the dairy butter would not constitute a homogeneous mass of fatty substance, but would be a solid emulsion of such fatty substance, in which the same existed as minute spheroids or particles of the said fatty substance separated

from each other by an aqueous fluid consisting of water holding in solution salt and traces of albumen and caseine.

"When the Mege product has been converted into a more perfect butter, as he calls it, by the addition of certain substances, as
51 indicated by him, it will then contain all or nearly all of the materials found in dairy butter, though not in exactly the same proportions; all these distinctive matters being, as a rule, present in smaller proportions in the Mege product than in the dairy butter.

* * * * * * *

"As articles of food, the Mege product and ordinary dairy butter are only distinguishable by characteristics which are variations of degree. Thus the Mege product in its simplest form would have less flavor and a less agreeable consistency than good dairy butter, while, on the other hand, its freedom from disagreeable flavor would render it superior to a low or poor grade of dairy butter. When the flavoring materials were added the Mege product would then be extremely difficult to distinguish from the best dairy butter, but, as compared with a very fine and highly flavored dairy butter, would be lacking in flavor. As regards wholesomeness, I do not think there would be any difference between the Mege product in either of its conditions and ordinary good dairy butter, though the Mege product would be the better in this respect than a strong or rancid quality of dairy butter. The same remark applies to the nutritiousness of the materials compared, while as regards palatableness the Mege product would, I think, hold an intermediate place between the highest and the lower grades of dairy butter, being better than the low grades and not quite equal to the highest in this respect."

Upon the process for utilizing his discovery Mege obtained foreign patents as follows: In France, July 15, 1869, for fifteen years; in England, on July 17, 1869; in Austria, on October 31,
52 1869, which expired May 26, 1876, and in Bavaria on April 8, 1873, which expired April 8, 1876. The application for the issue of patent in the United States was made December 13, 1873.

Under the first point raised by the defense, it is now insisted that the patent granted to Mege in this country had expired in this country before this suit was commenced, pursuant to the terms of section 4887, Rev. Stat. of the United States, because the Bavarian and Austrian patents having expired in April, 1876, and therefore that this patent, being for the same invention, expired at the same time, while it is contended on the part of the complainant that the American patent now before us is for a process different from that described in the other foreign patents and stands as an independent patent, to run seventeen years from the date of the original patent.

It is urged on the part of the defendants that Mege had estopped himself from denying the identity of the American and foreign patents—

First. Because his attorney, Mr. Seward, in his letter to the Com-

missioner of Patents of October 31, 1869, inclosing the application of Mege for the United States patent, says: "I am informed that a French patent for this process was issued to Mr. Mege October 2, 1869."

Second. Because Mege on making the application for his patent in this country made and filed in the Patent Office an affidavit, in which occurs the following statement: "I am the inventor of the improvement for transforming animal fats into butter referred to in said application; that French letters patent were duly issued
53 to me therefor on the 15th day of July, 1869, and that I have caused the above application to be made for the issuance of letters patent of the United States for the said improvement."

We think there can be no doubt, from the proof in the case, both Mege and his solicitors, who are men of high standing in their professions, thought at the time the original patent was applied for that they were covering the substantial process which Mege had patented abroad, but if these parties were laboring under a mistake their rights ought not to be defeated or seriously abridged by such mistake, and we therefore feel compelled to examine the proof as to the identity of the foreign and American patents.

We have already stated the steps in the process of the American patent, and a comparison of these with the foreign patents will, as it seems to us, best settle this question of the identity between this patent and Mege's foreign patents. Mege's Bavarian patent was granted April 8, 1873, and in his specifications he says:

"The new modes of procedure described herein consist both of chemical and physiological processes. * * * They are especially intended to benefit the navy and the less wealthy classes by furnishing excellent edible and preservable fats at a price considerably lower than that of present similar products—for instance, butter and the finer grades of fat.

* * * * * * *

"The new procedure depends on the following conclusions of modern science: 1, that the mal-odorous, colored, acid, and rancid ingredients are not originally contained in the crude fats as
54 they occur in nature; 2, that these harmful substances are developed by the activity of the organized tissues under the influence of fermentation, heat, and chemical agents; 3, that the fats of milk—termed butter—consist only of the immediate fat, which is altered first by a cellular tissue, and then by the organized tissue of the udder. By utilizing these principles in industrial pursuits or in domestic economy there is obtained from the crude fat and the tallow—

"A, a pure fat without the customary fatty smell and taste, which does not stick to the palate and which resembles the fatty bodies most desired for eating purposes.

"B, stearine for candles.

"C, as a residue, common tallow.

"D, this fat, really identical with the fat of butter taken from its source before it has been changed in the milk gland, can be made into different kinds of butter, which, although prepared by an arti-

ficial process, is really butter, and differs only from the ordinary butter by keeping fresh for a much longer length of time.

"The means employed in the new preparation of these partly new, partly old, products constitute in their details and in their entirety the invention which we claim as our property. They are as follows:

"1. Washing and crushing.—The crude fat is exposed to a jet of cold water between the conical cogs on two iron cylinders; it is finely subdivided by the current of water and the pressure, and falls thence into a tank, where a current of cold water completes the washing.

55 "2. Artificial digestion.—This fat, now freed from all soluble animal substances, is mixed with artificial gastric juice (stomach of the pig or sheep in acidulated water) to the extent of immersing it completely or to 1,000 kilo. of fat, 300 kilo. of water, 1 kilo. bicarbonate of sodium, and two stomachs (pig or sheep) are added. This mixture is then kept at the temperature of the animal body (by means of steam-pipes or otherwise) until all the molten fat has been dissolved by the pepsin or the stomachs, and appears in a clear layer on the surface. It is allowed to settle or it is decanted and the process repeated in order to extract all the fatty constituents, which now have lost the odor of animal fat, but have obtained a particular taste. The residue is tallow.

"3. Cooling.—The fluid fat is poured into vessels which have an opening at the bottom and contain a layer of tepid water; they are covered, and, when crystallization has occurred in consequence of cooling, the water is drawn off through the opening, the vessel is inverted, and the cake is allowed to fall on a table.

"4. Pressure.—This operation is intended to separate the hard constituent which makes the fat granular, congeal rapidly, and stick to the palate. The cooled fat is cut into slices about one-inch thick and put into a cloth between hot plates of a press. The portion which runs off is a mixture of margarine and oleine, resembling lard in composition and of about the taste of fresh butter. The solid residue taken out of the cloth is good stearine, fit for making candles immediately."

56 Here we have the directions of the Bavarian patent for producing the Mege product, consisting, first, of crushing between cogged cylinders and washing, by which it is "finely subdivided." The American patent says "a complete crushing is necessary under millstones," so that it would seem there is only a difference in degree in the Bavarian and American processes as to the crushing. The American process says the fat must be completely crushed so as to bruise all the cells. The Bavarian patent says it is to be finely subdivided by the current of water and by crushing between the conical cogs of iron cylinders.

In both patents Mege uses the word "crushing" as the title or heading for his directions. The directions for the artificial digestion are the same for the two patents, except that in the Bavarian he does not instruct specifically how to make the artificial gastric juice. He simply says it is "the stomach of a pig or sheep in acidulated water;" but the proof in this case shows that the mode

of making artificial gastric juice was well known in the arts before the date of Mege's invention, and he undoubtedly assumed that the persons who would attempt to use the process covered by his patent would have sufficient physiological and chemical knowledge and skill to make artificial gastric juice. The American patent also states that the fat while in the process of digestion is to be kept at a temperature of 103° F., while the Bavarian patent says it is to be the temperature of the animal body; but the proof in this case shows that 103° F. is the temperature of the animal body, so it
57 would seem there is no substantial difference between the processes of digestion described in the two patents. The third step in the Bavarian patent is entitled "cooling," the process of which is pouring the clear liquid fat into vessels which have an opening at the bottom and containing a layer of tepid water, where they are covered and remain until crystallization has occurred in consequence of the cooling. He does not give specific directions as to the temperature at which the fat is to be kept during the crystallizing process, but evidently leaves that to the skill of the operator, assuming that he will sufficiently understand by the use of the word crystallization what the process must be. The next step after crystallization is the separation of the oléo and margarine from the crystallized stearine, and this in the Bavarian patent is accomplished by pressure between the hot plates of a press. Inasmuch as the centrifugal machine or the hydro-extractor and the press are analogous devices for accomplishing the same results—that is, of expelling the liquid or fluid contents from the mass—there is no essential difference between the Bavarian and American patents in this step of the process. The Bavarian patent is also silent as to the neutralization of the ferments or germs of decay, but it can hardly be possible that any person would enter upon the manipulation of animal fat without sufficient common knowledge and skill to know without instruction by the specific terms of the patent that in order to produce sweet and pure oil or fat the process of fermentation and decay must be prevented; so that, taking the Bavarian patent as a whole,
58 there would seem to be such an identity in the processes described as to make them essentially the same. Probably because Mege assumed that whoever would attempt the transformation of crude fats under his process in Bavaria would possess more knowledge or experience in regard to the handling of fats than he assumed would be known in this country as a matter of general knowledge, he deemed it necessary in his American patent to give more minute and specific directions in regard to some of the steps of the process than he did in his foreign patents; yet we think there can be no doubt that he has substantially described the same process in both patents.

In the Austrian patent issued to Mege October 31, 1869, he describes the first process under the title of "Perfect Washing," which he says is done "by crushing the fresh fat just taken from the animal between rollers under a spray of fresh water." The second step, "Artificial Digestion," consists in mixing the crushed fat "with artificial gastric juice (maceration of a pig's stomach in acidulated

water) in sufficient quantity to immerse it, and the mixture is kept at the temperature of the animal body until the fat appears in a clear layer on the surface." Here we have the same process as in the American patent, except that the directions for crushing do not include grinding or crushing under millstones, and he gives no recipe for making artificial gastric juice, except that of the maceration of a pig's stomach in acidulated water, which we must infer he assumed was a sufficient direction to enable an ordinarily intelligent person skilled in the art of
59 manipulating or handling fats to make the gastric juice.

The directions for crystallization require the clear fluid fat to be poured into a vessel with an opening at the bottom and containing a layer of tepid water. The vessel is then covered, and when the cooling and crystallization have taken place the cooled mass is turned out, cut in slices, and placed in canvas bags and pressed between warm plates, by which method he says there is obtained about sixty per cent. of a fatty body resembling butter and identical in composition with lard, but free from odor and of a perfectly pure taste. The French and the English patents give substantially the same description for the process as is contained in the Austrian and Bavarian patents. All the steps of the American patent, with the exception of the neutralization of the ferments, are specifically called for and described, although, perhaps, not with all the minute directions which are found with the American patent. All the proofs agree that Mege was a man of inventive genius and high scientific acquirements, and it can hardly be possible that if between the time he took out the French, English, and Austrian patents, in 1869, and the Bavarian patents, in April, 1873, and the time when he applied for his American patent, in December, 1873, he had discovered any substantially new and material addition to the process covered by those foreign patents he would not have specifically named and stated wherein the American differed from the foreign patents. As already said, it seems clear from Mege's own statements and those of his solicitors that the purpose was to cover by the American patent what had been covered by his French patent
60 of 1869, and we cannot believe that if anything in addition to this foreign patent had been intended to be introduced into the American patent it would not have been stated in some explicit terms; and there can be no doubt that the French, Austrian, and Bavarian patents are substantially identical.

The scientific experts called by the complainant, Professors Morton, Chandler, and Wheeler, have testified that they do not think the invention described in the American patent is found in either of the foreign patents. Their reasons for such conclusion, briefly summarized, are—

1. That the crushing spoken of in the foreign patents is not so complete and thorough as that called for by the American patent, where the fat is to fall from cylinders under millstones, which shall completely bruise all the cells.

2. That in the American patent the digestion is to be accomplished with a less quantity of gastric juice than is called for by the

foreign patents, as the foreign patents say the crushed fat is to be immersed in the artificial gastric juice.

3. That by the American patent the temperature may be raised above 103° F., "so that the matters shall completely separate," while the foreign patents limit the degree of heat to the temperature of the animal body.

4. That in the foreign patents the process of cooling is allowed to proceed to such a point that the mass can be cut in pieces or slices, while in the American patent the product is not allowed to cool so as to become rigid, but is retained at a temperature of about 86.

61 With all due respect to the opinions of these eminent chemists, we must say that the points of difference suggested by their testimony are purely and wholly differences in degree. The necessity of crushing is stated in all the patents, both American and foreign. The degree of crushing would obviously affect the quantity of oil extracted from the fat by the process of digestion, as the only object of the crushing is to release the fat from the tissues in which it is held in its natural condition. The necessity for thorough and minute comminution is one that would suggest itself from any operative's common knowledge. Any man who had intelligence enough to know the uses of his own teeth would know the necessity of the complete comminution of any article to be subjected to the processes of digestion or the action of the gastric juice. It would hardly require a scientist to instruct an operative that the more finely a substance is comminuted the more direct and prompt would be the action of the gastric juice and the processes of digestion.

As to the differences in the process of digestion between the American and foreign patents, it would seem to be true that the measured quantity of gastric juice directed to be used in the American patent is less than that called for by the foreign patents, because he gives specific directions as to the number of liters of gastric juice for 100 kilogrammes of fat in the American patent, while in the foreign patent he says the fat must be immersed in the gastric juice;

62 but the proof shows that the formula for the gastric juice in the American patent gives a more potent and effective product, and we presume Mege may, by his experience and practice under his patents, have ascertained at the time he took the American patent that the process of digestion could be accomplished with a less quantity of gastric juice than was described in his first patents, but this is only a difference in degree, and with a larger quantity of gastric juice and not so complete comminution about the same result would probably be obtained as with complete and thorough crushing of all the fat cells and a smaller quantity of gastric juice, especially if made stronger or more potent, so that the difference in the American and foreign patents in that regard seems to us wholly immaterial and unsubstantial.

As to the claim that these witnesses find in the American patent permission to raise the temperature above 103° F., we do not think it is well founded when the whole of Mege's specifications in his American patent are considered. Under the third head, "Concen-

trated Digestion," Mege says "when the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed 103° F." Further on, in the same paragraph, he says "he slowly raised the temperature to about 103° F., so that the matter shall completely separate." Taking these two expressions together, it seems to us the first limits the second, and that the directions of the patent are specific not to raise the temperature above 103° F. Certainly the language, "I slowly raise the
63 temperature to about 103°," does not authorize raising the temperature above that point, when the distinction immediately before is that it must not exceed 103° F.; and when we consider this language of the specifications in the light of the testimony in the case which shows that gastric juice is destroyed whenever its temperature is raised much above 103° F. we think there can be no doubt that the eminent scientist who devised this process intended to keep within the limits in which his gastric juice would be operative for the purposes of digestion.

The last and final distinction that the foreign patents contemplated, a cooling of the mass below 86° or until it had become stiff so that it could be handled and cut before the pressure was applied for the purpose of separating the oleomargarine from the stearine, is a distinction, as it seems to us, without a difference. If the stearine had become crystallized in the mass, although it might at one time have been cooled below 86°, when it was sliced and placed between the warm plates in the press, the oleomargarine would again become liquid and flow out under the action of the warm plates and the press, so as to secure the separation, and that such was the result is sufficiently established by the statements in the foreign patents, notably the Austrian and English, that about 60 per cent. of a mixture of margarine and oleine of a composition identical with lard, but of superior flavor, was obtained by the pressure, — would seem to show in the light of the proof in this case that he obtained as large a product as is obtained by the process of the American pat-
64 ent. A fair test of the question as to whether the American patent is anticipated by the foreign patents or is included in them, we think would be: Were a person in this country, after the issue of the present American patent, to commence the manufacture of oleomargarine by the precise process described in the Bavarian or Austrian patents, supposing that process had not been patented abroad, would the courts refuse an injunction to restrain the use of the process on the ground that it infringed that covered by the American patent? We can hardly deem it possible that any intelligent court would deny an injunction if applied for under such circumstances, and we think this fairly illustrates the relation of the foreign to the American patent.

As to the question of infringement, it is stipulated into the record of this case that the defendant in its factory "first runs the fresh beef fat, which has been packed with ice during the preceding night, through a hasher, where it is thoroughly hashed and is comminuted, and then melts the hashed fat in a jacketed kettle at a temperature ranging from 120° to 130° F., the fat being thor-

oughly agitated by mechanical stirrers while melting, and salt being mixed with the fat while it enters the kettle, and then when settled the melted fat is drawn off into other kettles, when the temperature is raised about five degrees and maintained about three hours, when the fat is put into seeders, which are kept in a room at a temperature of 84° to 86° F. until it granulates and thickens, when the stock is put into cloths holding three pounds each in a flat cake seven by ten inches and one inch thick. Eight of these are placed on an iron plate and then an iron plate in alternation to seventy-five rows of cakes and plates and put into a press; then the oil is squeezed out by pressure in the press and runs into a tank, from which it is pumped through pipes into a kettle in the same room and temperature, where it remains several hours and is run into tierces.

The scientific experts for complainant say that this process is identical with that covered by the American patent; that the higher temperature at which the rendering or melting is done is the equivalent of the digestion called for by the patent, and that the processes of crystallization or seeding and separation by pressure are substantially the same.

We do not think it necessary to decide whether the process used by the defendant and that covered by the patent are identical or substantially so, because our view of the first question raised by the defendant must be decisive of the case; but it would seem to the unitiated certainly that there is room for a wide difference between the physiological process which Mege describes and directed should be pursued and the mere rendering process at a low temperature which the defendant followed. A reading of Mege's several patents, with his introductory remarks in regard to the nature and character of his invention, impresses us with the conviction that he thought his was a physiological process and dependent upon physiological principles; that his process of digestion by means of artificial gastric juice at the temperature of the animal body was an essential step in the production of the article which he designed should take the place of butter, while all the witnesses in this case agree that the product of the defendant's process, while it is pure fat, is odorless and tasteless, which is not the product which Mege intended should result from the practice of his process, as he says the product of his process should have the taste of almond or of fresh butter. Without, therefore, further discussing the question of infringement, we simply say that we find that the complainant's patent expired April, 1876, by the expiration of the Bavarian and Austrian patents.

The bill is therefore dismissed for want of equity.

Mess. Offield & Towle, sol. for comp't.
Mr. B. F. Thurston & Mr. T. D. Lincoln, of counsel.
Mess. Hill & Dixon, sol'rs for def'ts.

Endorsed: Filed M'ch 22, 1885. Wm. H. Bradley, clerk.

67 On the same day, to wit, on the 22nd day of March, in the adjourned March term of said court, 1886, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, district judge, is the following entry, to wit:

Decree.

COMMERCIAL MANUFACTURING COMPANY
v.
FAIRBANKS CANNING COMPANY. } In Chancery.

The court, having considered and being now fully advised upon the matters heretofore submitted herein, finds the equities with the defendant and orders that the bill of complaint herein be dismissed at the costs of the complainant. It is thereupon considered and adjudged by the court that said bill of complaint be dismissed at the costs of the complainant for want of equity, and that said defendant do have and recover of said complainant its costs in this behalf expended, amounting to — dollars and — cents, and that it have execution therefor.

And thereupon the complainant prays an appeal herefrom to the Supreme Court of the United States, which is allowed upon the filing by said complainant of a bond in the penal sum of one thousand dollars, with surety to be approved by the court.

68 Afterwards, to wit, on the twenty-first day of May, 1886, there was filed in said clerk's office an appeal bond in said entitled cause; which said appeal bond is in the words and figures following, to wit:

Know all men by these presents that we, the Commercial Manufacturing Company, Consolidated, and the National Dairy Company, as principals, and James M. Davis, as surety, are held and firmly bound unto Fairbank Canning Company in the full and just sum of one thousand dollars, to be paid to the said Fairbank Canning Company, its certain attorney, executors, administrator or assigns; to which payment, well and truly made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, by these presents.

Sealed with our seals and dated this twenty-first day of May, in the year of our Lord one thousand eight hundred and eighty-six.

Whereas lately, at a term of the United States circuit court for the northern district of Illinois, in a suit depending in said court between The Commercial Manufacturing Company, Consolidated, and The National Dairy Company, complainants, and Fairbank Canning Company, defendant, a decree was rendered against the said The Commercial Manufacturing Company, Consolidated; and The National Dairy Company and the said The Commercial Manufacturing Company, Consolidated, and The National Dairy Company having obtained an appeal and filed a copy thereof in the clerk's
69 office of the said court to reverse the decree in the aforesaid suit, and a citation directed to the said Fairbank Canning

Company, citing and admonishing it to be and appear at a Supreme Court of the United States to be holden at Washington the second Monday of October next:

Now, the condition of the above obligation is such that if the said The Commercial Manufacturing Company, Consolidated, and The National Dairy Company shall prosecute their appeal to effect and answer all damages and costs if they fail to make their plea good, then the above obligation to be void; else to remain in full force and virtue.

THE COM'L MANUFACTURING COMPANY, CONSOLIDATED, [SEAL.]
By WILLIAM REMSEN, *V. Pres't.* [SEAL.]
THE NAT'L DAIRY CO., [SEAL.]
By JAMES M. DAVIS, *Treas.*
JAMES M. DAVIS. [SEAL.]

Sealed and delivered in presence of—
MYRON H. PHELPS.
As to W. R., V. Pres't.
HENRY REMSEN.

Approved by—
H. W. BLODGETT, *Judge.*

Endorsed: Filed May 21, 1886. Wm. H. Bradley, clerk.

70 *Testimony of John Connolly.*

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Chancery.

At Chicago, in the northern district of Illinois, on this 30th day of April, A. D. 1883, at 10 o'clock a. m., before me, Frederick C. Goodwin, a notary public within and for Cook county, Illinois, residing in Chicago, in said district, at my office, room 14, No. 69 Dearborn street, Chicago, Illinois.

Present: C. K. Offield, Esq., on the part of said complainants, and T. S. E. Dixon, Esq., on the part of said defendants; and thereupon the following proceedings were had before me in said cause pursuant to notice hereto annexed:

Complainants'counsel here offers in evidence a certified copy of the articles of incorporation of one of the above-named corporation complainants, viz., Commercial Manufacturing Company, Consolidated, and requests the notary to identify it with this record and mark the same Complainants' Exhibit No. 1.

Complainants' counsel offers in evidence also certified copy of the articles of incorporation of the other corporation complainant, viz., The National Dairy Company, and requests the notary to identify

it with this record and mark the same "Complainants' Exhibit No. 2."

Complainants' counsel here offers in evidence certified copy of reissued letters patent granted the above-named corporation complainant, Commercial Manufacturing Company, Consolidated, dated June 13, 1882, and No. 10137, for improvement in treating animal fats, upon which patent the above-entitled suit is brought, and requests the notary to identify it with this record and mark the same "Complainants' Exhibit Mege patent."

71 Complainants here call JOHN CONNOLLY as a witness in their behalf, who, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. John Connolly; 26; 2818 Emerald avenue, Chicago; I have charge of the melting of oleomargarine; work for Mr. Dickson, of the National Dairy Company.

Q. 2. The National Dairy Company is one of the complainants in this suit, is it not?

A. Yes; I believe it is.

Q. 3. Are you familiar with the manufacture of oleomargarine oil for butter purposes; and, if so, when did you first become familiar with such manufacture?

A. Yes; three years and a half ago.

Q. 4. Did you ever work for the above-named defendant, "The Fairbank Canning Company;" and, if so, when and where did you work for that company and in what capacity?

A. I worked two months for them at the Union Stock Yards and had charge of the melting process and settling.

Q. 5. What two months did you work for this defendant?

A. June and July, 1882.

Q. 6. What was the principal, if not the sole, business of "The Fairbank Canning Company," of which you had personal knowledge, during the months of June and July, 1882?

A. I had nothing to do with anything but melting the oil.

Q. 7. From what was the oleomargarine oil manufactured or made by "The Fairbank Canning Company" during the months of June and July, 1882—what kind of fat?

A. Beef fat.

72 Q. 8. Please begin at the beginning and in your own language and way describe the exact process or method used by the defendant, "The Fairbank Canning Company," in making or producing their oleomargarine oil during the months of June and July, 1882?

A. First took the fat, washed it and trimmed it, and put ice onto it, cut it up in pieces, hashed it, melted it, then — in a jacketed kettle melted by means of steam going into the jacket. When it is melted, settled, drawn into a settling kettle, stands four hours in a settling kettle; drawn off into what is called seeders, allowed to set there

about three days, then put in bags, pressed, then it is put into tierces and sent off for butter purposes, so far as I know.

Q. 9. While this fat is being melted in the melting kettles, please state whether or not it it allowed to remain quiet while being melted.

A. No; it is agitated around.

Q. 10. By what means agitated?

A. By agitators run by steam-engine; goes constantly around until it is all melted.

Q. 11. What, if anything, is put or thrown into these melting kettles while the fat is being thus agitated and melted?

A. Salt.

Q. 12. How fine was this fat hashed, as you term, before it was placed or descended into the melting kettles?

A. Into a fine pulp, as fine as could be.

Q. 13. At what temperature did you melt this pulp or fat during the months of June and July, 1882, at defendant's establishment?

A. 120°; about that.

Q. 14. 120° Fahrenheit by your thermometer, do you mean?

A. Yes.

Q. 15. Was there water in this jacketed kettle into which the steam went to heat the kettle, or was there simply steam in the jacket?

A. There was water.

Q. 16. At what temperature was this oil kept after being drawn into what you have called seeders?

A. The room was kept 85° where it was put.

73 Q. 17. In what condition did this oil become while it stood in the seeders, and at the time it was put into the bags?

A. Granulated about at the heat of 80°.

Q. 18. What was this oil put into the bags and pressed for; what was the reason of it?

A. To get the oil from stearine.

Q. 19. What was done with the stearine?

A. It was packed in hogsheads.

Q. 20. The Union Stock Yards, where you did this work for the defendant corporation in June and July, 1882, are in this State and within a few miles of Chicago, are they not?

A. Yes.

Q 21. Please state whether or not this oil, when it came from the presses, after its separation from the stearine, was sweet and pure in its taste and flavor, or whether it had any tallow taste about it, as manufactured by you, as described, in June and July, 1882?

A. It was sweet and had no taste of tallow.

Q. 22. Please state what were your instructions, if any, as to the temperature at which you should melt the fat in June and July, 1882, and whether or not you used a thermometer by which to regulate such temperature?

(The first part of the above question objected to because calling for what witness was told by others and because it is incompetent.)

A. When I went to "Fairbanks Canning Company" I was instructed by Mr. Dean to melt the oil at about 120° or as low as I possibly could. He gave me a thermometer to regulate the temperature.

Q. 23. Who was Mr. Dean?

A. The superintendent, the boss of the factory.

Adjourned until Tuesday morning, May 1, 1883, at 10 o'clock a. m.

74 Met pursuant to adjournment.

Present: T. S. E. Dixon, for defendants, and C. K. Offield, for complainants.

Cross-examination by T. S. E. DIXON:

C. Q. 1. When did you first do any work for the National Dairy Company?

A. About two years ago, I think, as near as I can judge.

C. Q. 2. How long during the years 1881 and 1882 did you work for them?

A. I couldn't say; I didn't keep any account of the time. I don't know.

C. Q. 2½. You know how long you worked for them; tell us.

A. I couldn't tell; not to save me, I couldn't tell.

C. Q. 3. Is your memory any better with regard to the particulars of the process conducted than it is for whom you worked during the years 1881 and 1882?

A. Yes.

C. Q. 4. Well, then, tell us whether the "National Dairy Company" or its officers or agents employed or paid you for any services during the year 1882?

A. Yes.

C. Q. 5. What services, and how much did they pay you?

A. I worked a spell in that year; they paid me three dollars a day for my work.

C. Q. 6. How long a "spell?"

A. Well, I couldn't tell; I never kept any correct time.

C. Q. 7. Was the establishment of "The National Dairy Company" and their works in the city of Chicago?

A. Yes.

C. Q. 8. When did you pass from the establishment of "The National Dairy Company" to that of "The Fairbank Canning Company?"

A. On or about the 8th of June.

C. Q. 9. When did you pass from the establishment of "The Fairbank Canning Company" back to that of "The National Dairy Company?"

75 A. About the last of July.

C. Q. 10. Have you been with them ever since?

A. No; I worked awhile again for the Fairbank Canning Company.

C. Q. 11. When and how long?

A. I can't say what month it was in. I worked about a month. I can't say the month it was.

C. Q. 12. Well, about what time?

A. I believe it was about October, 1882.

C. Q. 13. You've been with the National Dairy Company ever since that time?

A. Yes.

C. Q. 14. Have you ever made an affidavit in behalf of the National Dairy Company relating to the process conducted by the Fairbank Canning Company?

A. Yes.

C. Q. 15. When was this?

A. I think it was August, 1882, as near as I can judge.

C. Q. 16. Soon after you returned to the National Dairy Company from the Fairbank Canning Company, was it not?

A. Yes.

C. Q. 17. Had you ever before made any affidavits relating to processes of treating fats by any other parties?

A. No.

C. Q. 18. Were you not employed or did you not receive some compensation from the National Dairy Company, its officers or its agents, for services for one kind or another rendered by you during each of the months of the year 1882?

A. No.

C. Q. 19. The officers of the National Dairy Company, when you returned to them in August, 1882, knew or were informed that you had been in the employ of the Fairbank Canning Company, were they not?

A. Yes; I guess they did. I am not sure.

C. Q. 20. You expressed a willingness to tell the details of their process, if they desired, did you?

A. No; not before I went to work there.

76 C. Q. 21. Then you refused or were unwilling to make the affidavit immediately, which they requested, were you?

A. No.

C. Q. 22. You were entirely willing, then?

A. Yes.

C. Q. 23. Did you perform any manual labor while with the Fairbank Canning Company?

A. Yes.

C. Q. 24. What was it?

A. I hashed fat.

C. Q. 25. Do you mean by that you fed the fat through the hasher?

A. Yes.

C. Q. 26. Did you do any other manual work while there; and, if so, what?

A. Yes; I done the melting.

C. Q. 27. Do you mean by that that you put the hashed fat into the kettle?

A. I mean that I conducted the steam to melt the fat.

C. Q. 28. Do you mean to say that you never put the fat into the kettle?

A. No.

C. Q. 29. Then that at times was part of your labor, was it?

A. Yes.

C. Q. 30. How long did you continue feeding fat to the hasher?

A. All the time I was there.

C. Q. 31. Mr. Dean was the superintendent and had charge of all the affairs, including the melting, was he not?

A. Yes.

C. Q. 32. It was his practice to watch the conduct of the process in that room carefully, especially the melting, was it not?

A. Yes.

C. Q. 33. Then he had charge of the melting, and, as you say you fed fat to the hasher all the time you were there, if you had any special charge of anything beyond the other workmen that were employed there it was of the hashing of the fat, was it not?

77 A. I had charge there of the melting of the fat. Mr. Dean gave me charge of the melting of the fat. He told the man that was settling the stuff to do as I told him.

C. Q. 34. You have just testified that Mr. Dean had charge of the melting and that you were employed "all the time you were there" in feeding fat to the hasher, have you not?

A. All the hashing that was to be done I done and then did the melting when I got through.

C. Q. 35. How many hashers were in use?

A. One.

C. Q. 36. Did they not at any time you worked there have more than one hasher in the establishment?

A. They had two when I went there, and as soon as I went there they took one down.

C. Q. 37. Did they never at any time that you worked there have more than one hasher in operation?

A. Not at one time, to the best of my knowledge.

C. Q. 38. You say they took one hasher down when you went there. When did they have it fixed so as to cut fat again?

A. They didn't put it up again in the factory.

C. Q. 39. Do you mean to say that at no time that you worked there they had two hashers that were capable of working?

A. They had two hashers that were capable of working when I went there.

C. Q. 40. Where did they get the other one, if you say they never put up the one they took down?

A. They had the other one there.

C. Q. 41. Then did they have three when you first went there, taking down one and leaving two capable of operation?

A. No; they had two when I first went there—took down one and left one.

C. Q. 42. Then do you say that after you first went there and they had taken down one hasher that at no time when you worked

for them did they have two hashers in their establishment capable of operation?

A. Not after they took the one down?

C. Q. 43. Do I understand you that you hashed the fat for a kettle full and then stopped the hasher and then put the hashed fat into the kettle and melted it and then after this kettle full was melted you started up the hasher and hashed another kettle of fat?

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A. When I went there in the morning I started to hash, kept right along till I got it all hashed, and then melted it.

C. Q. 44. Do you and Mr. Dean do all of this work, or were there other laborers that helped a little?

A. Mr. Dean didn't do any work; other laborers and me did it all.

C. Q. 45. Who were the other laborers?

A. I couldn't tell their names; they couldn't speak English.

C. Q. 46. How many were employed about the hashing and melting?

A. There were four.

C. Q. 47. Tell us what each of the other three did.

A. One of them threw the fat out of the tub, one more threw it onto the hasher, one more put salt into the kettle and picked up fat around, and I did the hashing.

C. Q. 48. They didn't put any fat into the kettles until all the fat was hashed, did they?

A. It was going in all the time as it was hashing.

C. Q. 49. And melting all the time that you were hashing?

A. Yes.

C. Q. 50. Then while you were at work at the hasher one of the other laborers was putting the hashed fat into the kettle and melting it, Mr. Dean having charge of all the operations?

A. No. When I hashed the fat it ran right into the kettle itself. Mr. Dean left all over to me.

C. Q. 51. In hashing the fat, as I understand it, you feed the pieces of fat continuously to the hashing machine, and that cuts it up into small pieces?

A. Yes.

C. Q. 52. Then while you were in this continuous work of feeding the hasher Mr. Dean paid no attention to the melting operation or the degree of temperature in the kettle?

A. Not excepting that I would call him over.

C. Q. 53. He never, except by your direction, took the temperature of the melting fat?

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A. I never see him.

C. Q. 54. He did it at your direction frequently, did he not, or had it done?

A. No.

C. Q. 55. Then he never paid any attention to the temperature of the melting fat?

A. No; told me what to do with it.

C. Q. 56. You never saw him test it with a thermometer?

A. No; yes; I did once.

C. Q. 57. If, while you were, as you have testified, continuously engaged in feeding a hasher, you were overseeing the melting and giving directions about it, even to Mr. Dean, what did he have left to do in that establishment?

A. He superintended the whole thing, as far as I understood it.

C. Q. 58. If the temperature in the kettle were allowed to run up to a high degree while you were engaged in hashing it would injure the fat, would it not?

A. Yes.

C. Q. 59. Could it run up to 140° without serious injury if care was taken and the fat kept in continual agitation?

A. Yes; I believe it could, but better to have it lower than that.

C. Q. 60. Will the temperature of the kettles range from 120° or 130° or 135° during the process of melting?

A. No.

C. Q. 61. What would be the range?

A. From 118° to 122°.

C. Q. 62. Might it not in some instances run up to 130°, you being continuously engaged in the hashing?

A. No.

C. Q. 63. Did you keep a thermometer in the fat all the time it was melting?

A. No.

C. Q. 64. Was there a test made of the temperature by a thermometer of every kettle before the fat was all melted while you were there?

A. No.

80 C. Q. 65. Then you cannot speak from personal knowledge as to the exact limit of temperature which may have been reached while you were there?

A. Not within two degrees.

C. Q. 66. You said in answer to direct Q. 2 that you were instructed by Mr. Dean to melt the oil at about 120°, or as low as you possibly could. What was the lowest temperature that you could practically melt the fat in the kettle so that it all would become liquid?

A. 100°.

C. Q. 67. Did you ever melt a kettle where the temperature was not allowed to pass over 100°?

A. No.

C. Q. 68. What is the lowest degree at which you ever melted an entire kettle of fat when the temperature did not rise above that degree?

A. 117°.

C. Q. 69. Was that in obedience to your instructions from Mr. Dean to melt the fat at as low a temperature as you possibly could?

A. Mr. Dean instructed me to melt it at 120°, or lower if possible, and that was what I done.

C. Q. 70. This hasher is a machine composed of knives that slice or cut the fat into very small pieces, is it not?

A. Yes.

C. Q. 71. How is this hashed fat agitated in a kettle while it is being melted?

A. By an agitator in the kettle. There was one shaft with arms coming out of it all of the way down the kettle.

C. Q. 72. And these arms are kept in constant revolution, stirring the fat while it is being melted?

A. Yes.

C. Q. 73. What would be the effect if the fat were left unagitated while it was being melted?

A. It would sour.

C. Q. 74. And spoil?

A. Yes.

C. Q. 75. After the fat is nearly melted salt is thrown into the kettle, and for what purpose is this salt used?

A. So as it will keep; so it will keep a long time; and helps the settling.

81 C. Q. 76. Does the salt settle down through the melted fat?

A. No; the salt melts in the kettle.

C. Q. 77. How large a quantity of salt is put into a kettle of melted fat?

A. About two pounds of salt to 100 pounds of fat.

C. Q. 78. When the fat is melted and the salt then thrown in how long a time before they draw off the fat?

A. Half an hour.

Adjourned until Wednesday morning, May 2, 1883, at 10 o'clock a. m.

Met pursuant to adjournment.

Present: Same as before.

Cross-examination by T. S. E. DIXON continued:

C. Q. 79. Did the Fairbank Canning Company treat the fat with gastric juice?

A. I couldn't tell.

C. Q. 80. Do you — what gastric juice is?

A. No.

C. Q. 81. Did they put into the fat any preparation made from the stomach of the sheep, calf, or other animal?

A. Not to my knowledge.

C. Q. 82. If they were in the habit of putting any such thing in the melting kettle, which you have said was under your charge, you would have known it, would you not?

A. Yes.

C. Q. 83. What other business did the Fairbank Canning Company carry on at their establishment at the stock yards?

A. They had a slaughter-house there, and canned meat.

C. Q. 84. Then this melting of the fat in the room in which you were was merely their incidental disposition of the fat of the animals they slaughtered, the meat of which they prepared for market?

A. Yes.

82 Redirect examination by C. K. OFFIELD:

R. D. Q. 1. It has appeared by your cross-examination that you again worked for the defendant, The Fairbank Canning Company, during the month of October, 1882. What work did you do for that company during that month?

A. The same as before. I worked in the night; that was the difference.

R. D. Q. 2 Did the defendant, The Fairbank Canning Company, use the same means and process for making oleomargarine oil during the month of October, 1882, which they employed during the months of June and July, 1882, as you have described?

A. In the month of October they hashed the fat the same day it was killed; in June and July they kept it over night; that's all the difference.

R. D. Q. 3. Did The Fairbank Mining Company, the defendant, produce the same product or the same kind of oleomargarine oil in this manner in October, 1882, as in the months of June and July, 1882?

A. Just the same.

JOHN CONNOLLY.

Subscribed and sworn to before me this 2d day of May, A. D. 1883.

[SEAL.] FREDERICK C. GOODWIN,
Notary Public.

Adjourned until Thursday morning, May 3d, at 10 o'clock a. m.

MAY 3, 1883.

Parties met pursuant to adjournment.
Present: Same as before.

And thereupon the complainants call HORACE MANLEY as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to questions asked by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

83 A. Name, Horace Manley; residence, Chicago; my occupation is making oleomargarine; I am now forty years old.

Q. 2. In whose employment are you now and how long have you been so employed?

A. I am in the employment of the National Dairy Company now three years.

Q. 3. Is the National Dairy Company one of the complainants in this suit, if you know?

A. Well, I understand they are; as well as I know they are.

Q. 4. What is your particular employment in connection with the National Dairy Company?

A. Well, I am foreman for them.

Q. 5. What is the exclusive business of the National Dairy Company?

A. It is making oleomargarine from beef fat.

Q. 6. When you use the word "oleomargarine" what do you mean by that—the oil or the butter, or both?

A. I mean the oil.

Q. 7. For how long a time have you been familiar with the practical manufacture of oleomargarine oil? I mean for how long a time have you personally been engaged in the manufacture of it as an employé or otherwise.

A. I think since October, 1873.

Q. 8. Have you been continuously engaged in the manufacture of oleomargarine oil since October, 1873?

A. All excepting about two months.

Q. 9. Please state whether or not you have that familiarity with oleomargarine oil as a product that you can distinguish it by its taste and smell.

(Question objected to because the indefinite term, oleomargarine oil, has a variety of meanings and the article itself, concerning which the question is asked, has in no respect been defined.)

A. I can.

Q. 10. Who are some of the principal parties for whom you have manufactured oleomargarine oil since October, 1873?

A. I have worked in the employment of the New Jersey
84 Dairy Company; also the Hudson County Dairy Company; the Toffey & Bro.'s, Jersey City; Mr. James Wilson, of Jersey City; Toby & Booth, of New York; the Commercial Manufacturing Company of New York, and the National Dairy Company of Chicago.

Q. 11. What is the sole use for which this oleomargarine is and was manufactured by the parties you have named, and as an article of commerce generally?

(Objected to as immaterial.)

A. For butter, as far as I know of.

Q. 12. Did you ever personally make perfect butter from oleomargarine oil, or, rather, develop the oil into a more butter-like product than the oil itself?

(Objected to as leading and also immaterial.)

A. I have helped to do it.

And thereupon an adjournment until Friday, May 4th, at 10 o'clock a. m., was taken.

MAY 4TH, 1883.

Met pursuant to adjournment.

Present: Same as before.

Q. 13. Do you know of a company doing business at or near Chicago known as the Fairbank Canning Company? If you answer in the affirmative, please state at what place said company is in business and the character of the business in which it is engaged.

A. Yes; I know the company; they are in the slaughtering business and manufacturing oleomargarine at the Union Stock Yards, near Chicago.

Q. 14. Have you ever visited the establishment of the Fairbank Company at the Union Stock Yards? And, if so, state when you were there.

A. Yes; I visited it September 20th, 1882.

Q. 15. Please describe in your own language and in detail what you observed in the oleomargarine factory of the Fairbank Canning Company when you were there on the day specified in your last answer.

A. They was engaged then in making oleomargarine. I saw five cleansing vats, hasher, two jacketed kettles, and all apparatus for making oleomargarine.

85 Q. 16. Were these jacketed kettles in use at the time you saw them?

A. They was.

Q. 17. Did they or did they not have melted oleomargarine stock in them at this time?

A. Yes; they had.

Q. 18. You have mentioned the fact of your visiting this establishment of the Fairbank Canning Company upon the day stated. Did you visit this place more than once on this day?

A. I did.

Q. 19. How far apart were your visits on that day?

A. About an hour, as near as I can tell.

Q. 20. You have testified that you saw two jacketed kettles containing melted oleomargarine stock. Did you see both kettles at the same time or did you see one kettle in this condition when you made your first visit and the second kettle on your second visit?

A. I see one on the first visit and one on the next.

Q. 21. Were the cleansing vats, hasher, and jacketed kettles which you saw the same as those in use at the establishment of the National Dairy Company where you are employed and the same as generally used by manufacturers of oleomargarine?

(Objected to as leading, immaterial, irrelevant, and incompetent.)

A. They are the same as used by the National Dairy Company, except some smaller; the kettles was the same, only the jackets were iron instead of wood; those of the National Dairy Company are wood and those of the Fairbank Canning Company were iron; the hasher was the same.

Q. 22. Please state which of the articles or utensils which you have mentioned you found to be smaller than those used by the National Company and others.

(Objected to as immaterial, irrelevant, and incompetent.)

A. The cleansing vats.

Q. 23. You have mentioned that you found a kettle of melted oleomargarine stock at this establishment upon the occasion of each of your visits. Had or had not the melting been completed?

86 A. It had been completed.

Q. 24. How long had it been completed?

A. Well, as near as I conld say, about 20 minutes; ready to be drawn off.

Q. 25. Did you examine this melted stock which you found in the kettles?

A. I did.

Q. 26. Did you or did you not test the temperature with a thermometer? If you answer that you did, please state the temperature which you found in each instance.

A. I did test them; I found the temperature about 120° Fahrenheit.

Q. 27. Were these tests both made at one time or did you test one kettle upon your first visit and the other upon your second visit?

A. I tested one on my first and one on my second.

Q. 28. You stated that you found the temperature of this melted oleomargarine stock in these kettles about 120°, and that it is your opinion that the melting had been completed about 20 minutes. Please state, in view of your long experience in the manufacture of this product, how much, to the best of your judgment, the temperature would have fallen from the time the fat was melted until these tests were made as stated by you.

(Objected to as incompetent, as the time the kettle had stood since the fat was melted before the witness entered the establishment and the decrease in temperature in proportion to this time are with the witness merely matters of opinion or guesses on his part.)

A. I don't think the temperature would fall any in that time.

Q. 29. Did you examine or taste and smell of the melted stock which you found in these kettles and the temperature of which you tested?

A. I both tasted and smelled.

Q. 30. In view of your long experience in the manufacture of oleomargarine, please give your best judgment, based upon such experience and examination that you say you made of this melted stock, as to the temperature at which the fat thus examined had been melted.

(Same objection.)

87 A. I think the fat was melted at a low temperature—at about 120°.

Q. 31. What did you find to be the quality of the melted stock which you examined in these kettles at the establishment of the Fairbank Canning Company?

A. Very good.

Q. 32. Of what kind of animal fat had this melted stock been made or produced?

A. From beef fat.

Q. 33. Was or was not this melted beef fat which you examined, as stated, free from any disagreeable or tallowy taste or smell?

A. It was free from any tallowy taste or smell.

Q. 34. Was or was not this stock which you examined suitable for use for butter purposes?

(Objected to as immaterial.)

A. It was suitable for butter purposes.

Q. 35. State how the melted oleomargarine stock which you examined and tested in these kettles at the establishment of the Fairbank Canning Company would compare with the stock made by the National Dairy Company and that made at other places where you have been employed and intended expressly for the use in the manufactured butter.

(Objected to as immaterial, incompetent, and irrelevant.)

A. Well, I think it compares with that I have made at the National Dairy Company; the same; it compares well with that I have made at the National Dairy Company; it compares with the same I have made at the Commercial Manufacturing Company, New York.

Q. 36. Did you or did you not, while at the establishment of the Fairbanks Canning Company, observe any arrangement or device intended for use while the fat was being melted for the purpose of agitating the same?

A. Yes, I did; they used stirrers or paddles to agitate it while the fat was being melted.

Adjourned until Saturday, May 5, 1883, at 10 o'clock a. m.

88 SATURDAY, *May* 5, *A. D.* 1883.

Met pursuant to adjournment.

Present: Same as before.

Adjourned until Monday, May 7, 1883, at 10 o'clock a. m.

Met pursuant to adjournment—present, same as before—May 7, 1883.

Q. 37. By what means were the stirrers or paddles referred to in your last answer operated?

A. By steam power.

Q. 38. In answer to one of the questions asked you, you stated that in your opinion the melting of the fat which you examined in the kettles at the establishment of the Fairbank Canning Company had been completed about twenty minutes, but that in your judgment the temperature would not have fallen to any perceptible extent during this space of time. What reason, if any, can you give in explanation of the fact that in your opinion there would have been no change in the temperature between the time the melting was completed and when you made the examination?

A. The water in the jackets is heated up to such a degree that it keeps it from falling.

Q. 39. Are you, as foreman for the National Dairy Company, familiar with the temperature followed at their establishment in melting beef fat for the production of oleomargarine?

(Objected to as immaterial, irrelevant, and incompetent, the question of temperature being a question of fact and the facts relating to the defendant's establishment only being at issue.)

A. Yes; I am familiar with it.

Q. 40. How would the temperature at which you found the melted oleomargarine stock in these kettles at the Fairbank Canning Company's factory and the temperature at which you have stated you believe the fat to have been melted compare with the temperature used or followed by you as foreman at the establishment of the said National Dairy Company?

(Same objection.)

A. They are the same.

89 Q. 41. You have testified in reference to testing the melted fat in these jacketed kettles by the use of a thermometer, also that you both tasted and smelled of this fat to ascertain its condition and quality. How thorough a test as to temperature and how careful an examination as to the quality of the stock did you make?

A. Well, I held the thermometer in it, as I should judge, about five minutes, and both tasted and smelled. I should call it an excellent article of oleomargarine.

Cross-examination by T. S. E. DIXON:

C. Q. 1. You say, "I should call it an excellent article of oleomargarine." Then, if I understand you, this substance in the kettles in which you held a thermometer and both tasted and smelled is the substance which, in your testimony, you term and call by the name of "oleomargarine?"

A. Yes; oleomargarine stock.

C. Q. 2. But you use the name of "oleomargarine" in your preceding answer, and in your direct testimony you have only testified to an examination of the substance in the kettle, of which you took the temperature and tasted. Then whenever in your direct testimony you used the term "oleomargarine," if I understand you now, you meant "oleomargarine," the meaning of oleomargarine stock?

A. I mean oleomargarine stock.

C. Q. 3. This substance which you found in the kettles at defendant's establishment and which you now call oleomargarine stock was simply beef fat melted so that the animal tissue was removed from it, was it not?

A. It was beef fat melted at about 120° Fahrenheit.

C. Q. 4. Simply that and nothing more, was it not?

A. That was all, as near as I should say.

C. Q. 5. You stated in answer to direct question 34 that this melted fat which you examined was suitable for use for butter purposes. Would you consider that this merely melted fat, after it had cooled, was suitable to be put upon our tables to be eaten as butter?

A. Not in its present state.

C. Q. 6. Neither would you consider the lard which is now so extensively used to adulterate butter, in the form of butterine, when it is in the condition of pure lard, as suitable for butter purposes, would you?

90

(Objected to as not being proper cross-examination, inasmuch as the witness has not been asked any questions in relation to the use of lard in the manufacture of what is termed butterine, and the record does not disclose that he has any knowledge in relation thereto.)

A. No, I shouldn't.

C. Q. 7. Then you would consider that this melted beef fat you found in the kettle was just as suitable for butter purposes as any other melted beef fat that was sweet and free from disagreeable taste and smell?

A. Just as suitable; yes, I should.

C. Q. 8. Did this fat have any positive taste or smell of any kind, or was it sweet, tasteless and odorless?

A. It was tasteless and odorless.

C. Q. 9. It did not have what is known as the peculiar butter taste and smell that is characteristic of good butter?

A. No, it hadn't.

C. Q. 10. After this fat is melted in the kettle and stood a few minutes in that condition, does a few minutes more or less standing effect any decided change or appearance in the condition of the fat?

A. It does in the appearance.

C. Q. 11. Describe the change in the appearance.

A. When the paddles that stir it first stop it is very light color, the oil; after a few minutes then it changes its color, and in about twenty minutes it becomes a dark amber.

C. Q. 12. What further change in its appearance takes place as it continues to stand in the melted condition, if any?

A. Sometimes the scrap rises from the bottom.

C. Q. 13. And sometimes it does not, too?

A. Yes, sometimes it does not.

C. Q. 14. Then if one enters an establishment where the melting takes place, twenty minutes after the melting has ceased, or again in thirty or forty or fifty minutes after the melting has ceased, he might sometimes find the fat presenting the same appearance on each of his visits?

91

A. Yes, he might.

C. Q. 15. Does not the temperature often vary at different stages in melting the fat, a little one way or the other?

A. Well, that is, if any one may want it to do; if they want it to vary they can.

C. Q. 16. Then if you entered an establishment after a kettle of fat had been melted, you could not tell of your own personal knowledge the exact degree of heat which had been employed at each and every stage at the previous melting of the fat?

A. No, I couldn't.

C. Q. 17. You say you found stirrers in the kettles driven by steam power. What is the use of these stirrers and why are they employed?

A. To agitate the fat while it is melting.

C. Q. 18. What would be the result if they were not employed?

A. The fat would burn on the sides of the kettles and it would not melt in the center.

C. Q. 19. Then the process would be inoperative if the fat were not stirred and kept in operation while melting and the stirring took place only after the fat had been melted—I mean inoperative to produce a sweet melted fat, free from disagreeable odor and taste?

A. I never see any made unless it was stirred.

C. Q. 20. But you have stated that if the fat was not stirred while melting it would burn on the sides of the kettles, and it would not melt in the center; this necessarily would render the process inoperative to produce a sweet fat, free from disagreeable taste and odor, would it not?

A. I think it would.

C. Q. 21. Did you take the temperature with a thermometer of the water or steam in the jacket, upon your visits to defendant's establishment?

A. I did not.

C. Q. 22. When was your first experience in melting beef fat in any manner?

A. In 1873, I think, October.

C. Q. 23. State the circumstances.

A. I first engaged in the business in October, 1873; the
92 New Jersey Dairy Company. Well, the superintendent hired me to work pressing—running presses. I helped render the kettles; general hand all through the building.

C. Q. 24. State who were the proprietors of this company, where their factory was located, and who was their superintendent at the time.

A. John Tinney, superintendent; a man by the name of Harrington, the president. The factory was located near Jersey City, and is now Jersey City, as I understand it.

C. Q. 25. How long had they been running when you went into their establishment?

A. But a short time.

C. Q. 26. What was their business?

A. Making oleomargarine butter.

C. Q. 27. Were they using the Paraf process?

A. I couldn't say. I don't know.

C. Q. 28. Under whose patent or whose authority did you understand they were making?

A. Well, I never understood.

C. Q. 29. Well, who was the active man in founding the establishment?

A. John Tinney.

C. Q. 30. Do you know with whom he had been before his connection with this company?

A. I do not.

C. Q. 31. Describe the process you worked there.

A. Well, we took the beef fat in, put it into cleaning vats, washed

it, took it out and laid it on a table, cut it up, then hashed it into the kettles, then melted it at 120° or near that as near as we could, then drawed it off into vessels to cool; from there we put it into bags or cloths and then put it into the presses, and when it was pressed the oil was taken, then mixed with milk and churned into butter.

C. Q. 32. How did you hash the fat?

A. Well, they hashed it with a steam hasher, just about the same as they use now.

C. Q. 33. At about what temperature was the stock kept before it was put into the press?

A. At about 80°.

Adjourned until May 8, 1883, at 10 o'clock a. m.

93 Met pursuant to adjournment—present, same as before—May 8, 1883, 10 o'clock a. m.

C. Q. 34. How long did you remain with the New Jersey Dairy Company?

A. I think about six months.

C. Q. 35. That is, during the months of October, November, and December, 1873, and about three months in 1874?

A. Yes; that's as near as I can state.

C. Q. 36. What was your principal work while with this company?

A. It was in the press-room pressing the oleomargarine, separating the oil from the stearine.

C. Q. 37. Please describe the process that was employed.

A. The oleomargarine stock was taken from the seeding coolers, put between cloths or bags, and then put into the presses between iron plates, and then the pressure was put on and the oil was pressed out.

C. Q. 38. Please describe the seeders.

A. There was a vessel made of wood, lined with galvanized iron, about four foot by four and a half, about two feet deep.

C. Q. 39. Give the particulars of their use.

A. They was used for oleomargarine stock when drawn from the kettles, then was run into a seeding-room and allowed to stand there for about two days; the temperature I cannot give as I do not know, but should think at about 70°; then they was put into cloths or bags, put in the presses between iron plates; the pressure then was put on and the oleomargarine was separated from the stearine.

C. Q. 40. Describe the press.

A. Well, the press, I think, was about seven foot high, two foot and a half wide, about four foot long, with a head block and foot block of wood, with four iron bars for the plates to rest against. The plates was made of iron about two foot wide, four foot and a half long, and about forty of them in a press.

94 C. Q. 41. How many seeders did they have in the establishment?

A. Well, as near as I could judge, I think about ten.

C. Q. 42. What did they do with the oil when it came from the press?

A. Mixed it with milk and churned it for butter.

C. Q. 43. What was their average daily product of butter in pounds?

A. Well, that I don't know.

C. Q. 44. Give an estimate as near as you can.

A. Perhaps two thousand pounds.

C. Q. 45. Where did this company procure its beef fat?

A. Jersey City abattoir.

C. Q. 46. Was the oleomargarine stock made by this company similar to the oleomargarine stock you saw in the defendant's establishment?

A. It was something similar to it, but not so nice.

C. Q. 47. You say it was melted at a temperature of about 120°. Was it sweet and free from disagreeable tallowy taste or odor?

A. Yes.

C. Q. 48. Was the oleomargarine oil which they made and churned with milk the substance which is now known in the trade by the name of oleomargarine oil?

A. I think it was the same.

C. Q. 49. As an intelligent man, what was your understanding at the time as to how or from whom Mr. Tinney, the superintendent, acquired the knowledge of the process enabling him to conduct so well so extensive an establishment in that early day?

A. Well, I didn't understand anything about it.

C. Q. 50. Did you hear anything at that time or before or after of the Paraf establishment, that was running over in New York, for treating fat to make oleomargarine, or *at* any other establishment of similar purpose?

A. I heard of the Paraf patent after that.

C. Q. 51. Where was this Paraf establishment running?

A. I have heard it was running in New York.

C. Q. 52. Whereabouts in New York?

95 A. I do not know.

C. Q. 53. How long was it after you heard of the Paraf establishment?

A. That I can't say.

C. Q. 54. You mean after you entered the employ of the New Jersey Dairy Company?

A. Yes; I think it was after.

C. Q. 55. Do you know how long the Paraf establishment had then been running?

A. I do not.

C. Q. 56. Did you hear of any other establishment of similar purpose during October or November, 1873?

A. Not as I remember of.

C. Q. 57. Give the names of some of the men that were employed in the New Jersey Dairy Company during those months.

A. There was a man by the name of Gardner Brewster; that's all

I remember. Well, Tinney, the superintendent—think it was Joe or John.

C. Q. 58. Do you know where they are?

A. I do not.

C. Q. 59. What street and what number was the New Jersey Dairy Company's factory at Jersey City?

A. It was on Lafayette street; the number I don't recollect.

C. Q. 60. Near what cross-streets?

A. I think near Pine street.

C. Q. 61. Describe the building.

A. It was a two-story brick, about, as near as I could judge, twenty-five feet front, well, I think facing nearly south.

C. Q. 62. How long after you left this company did they continue in operation?

A. Well, I don't think they continued in operation any longer.

C. Q. 63. What did Mr. Tinney do afterwards?

A. Well, I don't know what he did, but I saw him about two years afterwards working for Toffey Brothers.

C. Q. 64. What Toffeys, and where was their establishment and what was their business?

96 A. John Toffey, William Toffey, Daniel Toffey, and George Toffey; their establishment was in Jersey City, and their business was making oleomargarine oil from beef fat.

C. Q. 65. When did you enter the employ of the Hudson County Dairy Company, what was their business, how long were you with them, and what did you do while in their employ?

A. I entered their employment April, 1874, I think. Their business was making butter from beef fat. I was with them about eight months, I think. I used to run a press separating the oil from the scrap. I also worked at the kettles rendering oil.

C. Q. 66. At what temperature did this company melt the fat?

A. I do not know.

C. Q. 67. You say you worked at the kettles rendering oil. Don't you know at what temperature you rendered it?

A. I do not. I didn't have charge of the temperature.

C. Q. 68. What did you understand as to what patent, if any, or under whose authority this company worked?

A. Under Willis' patent.

C. Q. 69. When was that granted?

A. I do not know.

C. Q. 70. Describe the process as worked by that company while you were with them.

A. The fat was taken in and washed, put on a table, then hashed, then put into the kettles, when it was melted, drawn off, put into a vessel, from there into the churns, mixed with milk, and churned.

C. Q. 71. Was the fat, after it was melted, sweet and free from the disagreeable tallowy odor?

A. It was free from disagreeable tallowy taste or odor. Yes; I think it was sweet.

C. Q. 72. When did you enter the employment of Toffey Brothers?

A. Well, I couldn't state now the time I did enter their employment. I think about 1875, as near as I should judge.

C. Q. 73. Under what patent, if any, or under whose authority did you understand that Toffey Brothers operated?

97 A. Well, I don't know as they were at work under any patent at that time. They didn't claim to be working under any patent.

C. Q. 74. Describe the process they employed.

A. The fat was washed, put onto a table, cut, then hashed, then put into the melting kettles, melted, drawn into smaller kettles, from there into vessels to seed, from there put into the presses between plates; the oil was then separated from the stearine by steam pressure.

C. Q. 75. Did the New Jersey Dairy Company, the Hudson County Dairy Company, and Toffey Brothers all make use of salt in preparing the fat into oleomargarine stock?

A. The New Jersey Dairy Company and the Hudson County Dairy Company did not, but the Toffey Brothers did.

C. Q. 76. At what temperature did the Toffey Brothers melt the fat?

A. About 140°.

C. Q. 77. Was their oleomargarine stock in general sweet and free from disagreeable tallowy flavor and odor?

A. Yes; it was sweet and free from any tallowy taste and odor.

C. Q. 78. In your experience what is the range of temperature within which beef fat can be melted and be sweet and free from the disagreeable tallowy taste and odor?

A. Well, from 120° to 140° Fahrenheit.

C. Q. 79. Why do you place the lowest degree at 120°?

A. Well, I think it makes a better article, more like butter.

C. Q. 80. My question was, within what range of temperature beef fat could be melted and be sweet and free from a disagreeable tallowy taste and odor? You still adhere to 120° as the lowest limit, of course, it being understood that this is the limit above which the fat does not rise at any time?

A. Yes; it can be melted below 120° and be sweet and free from a disagreeable tallowy taste and odor.

C. Q. 81. What is the lowest point at which you have

98 melted a kettle of beef fat? I mean the lowest and above which the fat did not rise at any time during the melting?

A. 117° Fahrenheit.

C. Q. 82. This is the lowest limit of temperature, in the practical rendering of beef fat, to produce a sweet product, free from disagreeable taste or odor?

A. Well, I think that is about the lowest degree.

C. Q. 83. This judgment is based upon your experience during the last ten years in this business and as foreman in one of the complainant's factories?

A. Yes; about ten years.

Adjourned until Wednesday morning at 10 o'clock, May 9, 1883.

WEDNESDAY, *May* 9, 1883—10 o'clock a.m.

Parties met pursuant to adjournment.

Present: Same as before.

Redirect examination by complainant's counsel:

R. D. Q. 1. Please state what are the principal elements to be found in oleomargarine stock, such as you examined in the melting kettles of the establishment of the Fairbank Canning Company.

(Objected to as improper on redirect examination.)

A. I found it to be a very nice article. What do you mean by "elements?"

R. D. Q. 2. By "elements" I mean what composes or makes up this oleomargarine stock, such as you examined. Is it entirely made up of oil on the beef fat, or is it partially made up of something else?

(Same objection.)

A. It is made up of oil and stearine.

R. D. Q. 3. To the best of your judgment, what portion of it would be stearine?

(Same objection.)

A. It varies, according to the quality of the fat. The poor quality of fat, about one-third is stearine.

R. D. Q. 4. What taste or smell, if any, does this stearine have when separated from the oil?

(Same objection.)

99 A. Not any taste or smell.

R. D. Q. 5. You stated during the course of your cross-examination that you found this melted oleomargarine stock which you found in the kettles at the establishment of the Fairbank Canning Co. tasteless and odorless. Suppose this stock, composed principally of oil and stearine from beef fat, had been allowed to settle and granulate and the oil had then been separated from the stearine by pressure, what taste or smell, to the best of your judgment, would this oil have had?

(Objected to because calling for an expression of opinion and a guess upon what is solely a question of fact.)

A. It would have had a sweetish taste, something like butter.

R. D. Q. 6. You have testified, to one of the questions propounded to you by the counsel of the defendants during the cross-examination, that it was your experience that beef fat could be melted, and still be free from a disagreeable, tallowy taste and odor, within a range of from 120° to 140° Fahr. When the temperature is raised from 120° up towards 140° what effect, if any, does it have upon the product?

A. It is more apt to have a tallowy taste as the temperature rises.

R. D. Q. 7. You stated, in reply to one of the cross-questions asked you, that the lowest temperature at which you had ever melted a kettle of beef fat was 117° Fahr. Suppose beef fat should be melted at a lower temperature than that stated by you, what effect, in your judgment, would it have upon the oleomargarine stock thus produced?

(Objected to because witness stated in the same connection that 117° was the lowest practicable limit in working this process.)

A. I think the lower you melt it the better quality of stock and oil you get from it.

R. D. Q. 8. You stated, in reply to cross-question 16, that if you entered an establishment after a kettle of fat had been melted you could not tell of your own knowledge the exact degree of heat which had been employed during the melting of the fat. Could you not tell by careful examination of any oleomargarine stock whether or not the fat used to produce the same had been melted at a high or low temperature?

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A. I could tell within a few degrees.

R. D. Q. 9. When the counsel for the defendant asked you the question to which your attention has just been called, relative to your being able to tell after a kettle of fat had been melted as to the degree of heat employed while melting, and in response to which you replied that you could not tell the degree of heat which had been used, what did you understand the question to mean?

A. I understood him to mean if I could tell how long it had been standing in the melting kettles.

R. D. Q. 10. You have testified during your cross-examination that you did not regard this melted oleomargarine stock, such as you examined in the kettles at the Fairbank Canning Company's establishment, as suitable to be used as a substitute for butter in the condition at the time of such examination. Suppose this stock had been permitted to settle and granulate or grain and had then been pressed, would or would not, in your judgment, the oleomargarine or oil thus separated from the stearine be suitable for use, to a certain extent, as a substitute for butter?

(Same objection as to R. D. Q. 5.)

A. I think it could be used for cooking purposes and would be better than poor butter. If it should be mixed with milk and churned it would be still better.

Recross-examination by Mr. DIXON:

R. C. Q. 1. Sweet and pure lard is better for some cooking purposes than poor butter, is it not?

(Objected to because the previous examination of the witness has not disclosed that he has any knowledge whatever in relation to lard, its qualities, or the uses to which it may be applied.)

A. Well, I don't know about the lard; have not any experience in the matter.

R. C. Q. 2. Do you mean any experience in the matter of what is suitable for cooking purposes?

A. I mean I have no experience in rendering lard.

101 R. C. Q. 3. My former question had no relation to method of rendering lard. What I ask is, is not sweet, pure lard used for cooking purposes, and is not its use preferable in some instances to poor butter?

A. Well, I don't know. I never used it for that purpose.

R. C. Q. 4. You have very little knowledge personally of the use of fats and oils for cooking purposes—that is, personal experience?

A. I have seen oleomargarine used for cooking purposes.

R. C. Q. 5. Did you never see or know or hear of the use of pure lard for cooking purposes?

A. I have and I have heard of poor butter being used for cooking purposes, but never heard which was the best.

R. C. Q. 6. If I understand you, the oleomargarine oil with which you are familiar has a "sweetish taste"—this oleomargarine oil, I mean, before it is flavored or churned with milk, has a "sweetish taste"—by which you mean it is sweet without any positive flavor and free from any objectionable or tallowy taste?

A. After it has been pressed it has a sweetish taste and free from any tallowy taste or disagreeable odor. I answer in the affirmative.

R. C. Q. 7. Have you ever heard of oleomargarine oil being used in part in making cheese?

A. I have heard of it, but do not know whether it has been or not.

HORACE MANLEY.

Subscribed and sworn to before me this 9th day of May, A. D. 1883.

FREDERICK C. GOODWIN,
Notary Public.

Adjourned until Thursday morning, May 10, 1883, at 10 o'clock a. m.

102 THURSDAY, *May* 10, 1883—10 o'clock a. m.

Parties met pursuant to adjournment.

Present: Same as before for defendants, and H. S. Towle for complainants.

And thereupon the complainants call JOHN LEO as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposed as follows in answer to questions propounded to him by Mr. TOWLE:

Q. 1. Please state your name, age, residence, and occupation.

A. John Leo; age, thirty-eight; residence, 2520 South Halsted; renderer of oleomargarine.

Q. 2. Where are you now employed?

A. At the National Dairy Company.

Q. 3. Please state how long you have been in the employ of this company.

A. Since October, 1880.

Q. 4. Have you any knowledge as to whether or not the National Dairy Company is one of the complainants in this suit in which your testimony is now being taken?

A. I have heard they are.

Q. 5. What is the character of the business of the National Dairy Company?

A. The manufacture of oleomargarine.

Q. 6. What kind of fat do they use in such manufacture?

A. Beef fat only.

Q. 7. In using the term oleomargarine in your second preceding answer, do you mean butter or oil and stearine before being separated or do you mean the oil alone?

A. I mean the oil after the stearine is extracted.

Q. 8. For what use or purpose is the oleomargarine manufactured by the National Dairy Company intended?

(Objected to as immaterial.)

A. For the making of butter.

103 Q. 9. For how long a time have you been familiar, practically, with the manufacture of oleomargarine oil, or how long have you been engaged in or connected with such manufacture?

A. For over seven years.

Q. 10. Where were you first employed and by whom?

A. Jersey City, New Jersey; by James Wilson.

Q. 11. How long were you in the employ of Mr. Wilson, at Jersey city, and what were your duties as an employé?

A. About one year. I was in charge of the settling kettles.

Q. 12. Where were you next employed and by whom?

A. New York; by Commercial Manufacturing Company.

Q. 13. How long were you in the employ of the Commercial Manufacturing Company of New York?

A. About four years.

Q. 14. What were your particular duties while in the employ of the Commercial Manufacturing Company of New York?

A. Melting kettles and settling kettles.

Q. 15. What did you have to do, in connection with the melting kettles and settling kettles, at the establishment of the Commercial Manufacturing Company?

A. I worked on both at different times.

Q. 16. Please state what was the particular business of James Wilson at Jersey City and the Commercial Manufacturing Company at New York while you were in their employ?

A. Manufacturing oleomargarine.

Q. 17. From what kind of fat?

A. Beef fat.

Q. 18. What occasioned your leaving New York and coming to Chicago?

(Objected to as immaterial, irrelevant, and incompetent.)

A. I was hired by the National Dairy Company.

Q. 19. State, if you know, the particular reason why you were thus hired?

(Same objection.)

104 A. Well, I don't know any particular reason, except that they wanted men who had a knowledge of the business.

Q. 20. Since you entered the employ of the National Dairy Company have you been in the employ of any other person or persons? If you answer that you have, state where and by whom employed.

A. I have; George H. Hammond & Company, of Hammond, Indiana.

Q. 21. Please state why you entered the employ of George H. Hammond & Company and the character of your work while there.

(Same objection.)

A. I was sent by the National Dairy Company to make oleomargarine stock. I superintended the manufacture of oleomargarine.

Q. 22. What are and have been your particular duties at the National Dairy Company's at Chicago?

(Same objection.)

A. I have charge and have had charge of the stock or seeding room.

Q. 23. Have you been continuously engaged in connection with the manufacture of oleomargarine intended for use for butter purposes since you entered the employ of James Wilson, in the year 1875?

A. With the exception of about nine months.

Q. 24. Please state whether or not you have such familiarity with oleomargarine oil as a product that you can distinguish it by its taste and smell.

(Objected to, because the term "oleomargarine oil" has a variety of meanings and is applicable to a variety of products, and because the term "oleomargarine oil" has not been identified or sufficiently described and defined in any of the preceding questions and answers.)

A. I can.

Q. 25. For what purpose was the oleomargarine intended which you assisted in manufacturing or superintended the manufacture of while in the employ of Mr. James Wilson at Jersey City, the Commercial Manufacturing Company at New York, and George H. Hammond at Hammond, Indiana?

105 (Objected to as immaterial.)

A. Butter purposes.

Q. 26. Did you ever personally make or assist in making from oleomargarine oil perfect butter or a product more like butter than the oil itself?

(Same objection, and also because leading.)

A. I assisted in making it.

Q. 27. Do you know of a company or corporation doing business at or near Chicago, called the Fairbank Canning Company? Should you state that you do, give the place where said company is located and the character of the business in which said company is engaged.

A. Yes; I know them; have a slaughter-house and oleomargarine factory at the Union Stock Yards, near Chicago.

Q. 28. Have you ever visited the establishment of the Fairbank Canning Company; and, if so, when were you there?

A. I visited it on the 20th of September, 1882.

Q. 29. What particular part or parts of their establishment did you then visit?

A. Their melting-room.

Q. 30. Did you or did you not make an examination of the contents of this room on the day stated by you?

A. I did.

Q. 31. Please describe in detail what you saw in the melting-room of Fairbank Canning Company's establishment when you were there September 20, 1882.

A. I saw five cleansing vats, one hasher, and two jacketed kettles with paddles.

Q. 32. What is the use or purpose of these paddles or stirrers which you saw, and how were they operated?

A. The use of the paddles, they agitate and assist in the melting of the fat; they run by steam.

Q. 33. Were these jacketed kettles in use at the time you saw them?

A. Yes.

Q. 34. Did they or did they not have melted oleomargarine stock in them at the time you were in the melting-room as stated?

(Objected to as leading in regard to what were the contents of the kettles.)

A. Yes.

106 Q. 35. You have mentioned the fact of your visiting the establishment of the Fairbank Canning Company on a certain day; did you visit such melting-room more than once upon that day?

A. Twice.

Q. 36. How far apart were your visits?

A. About an hour.

Q. 37. You have testified that you saw two jacketed kettles, and that they were both in use; will you please state the condition in which you found these kettles at the time of your first visit to the melting-room?

A. The paddles had been stopped in one of them, and the paddles were working in the other.

Q. 38. What was the condition of the kettles on the occasion of your second visit to the melting-room, about an hour later?

A. There was only one kettle full at my second visit and the paddles had stopped.

Q. 39. Were the cleansing vats, hasher, jacketed kettles, and pad-

dles which you saw in the melting-room of the Fairbank Canning Company the same as used by you while employed at Jersey City, and by the Commercial Manufacturing Company at New York, and by George H. Hammond and Company at Hammond, Indiana, and the same as used by the National Dairy Company of Chicago, or were they different?

(Objected to as immaterial, irrelevant, and incompetent, and also because leading.)

A. They are on the same principle as at Jersey City and New York. They differ with the kettles at Hammond and some at the National Dairy Company, as Hammond and some of the National Dairy Company kettles have wooden jackets, and the vats are a little smaller than those used by the said companies. The hasher was the same.

Q. 40. Did you examine the contents of these jacketed kettles in the melting-room at the factory of the Fairbank Canning Company? If you did, please state what you found such contents to be.

A. Yes; I examined them; found them to be oleomargarine stock.

Q. 41. You mean, do you not, that you found the kettles to contain melted oleomargarine stock?

107 A. I mean that I found the kettles to contain oleomargarine stock.

Q. 42. When did you examine the contents of these kettles? Did you examine both kettles on the occasion of your first visit?

A. Only one on the occasion of my first visit.

Q. 43. When did you examine the contents of the second kettle?

A. About an hour after the first.

Q. 44. How long, to the best of your judgment, based upon your experience in this line of manufacture, had the melting been completed in the first kettle when you made this first examination?

(Objected to because calling for an expression of opinion or a guess upon a question of fact.)

A. From twenty to twenty-five minutes.

Q. 45. About how long, in your opinion, had the melting been completed in the second kettle when you examined the same?

(Same objection.)

A. About twenty minutes.

Q. 46. Did you or did you not test the temperature of the oleomargarine stock that you found in these kettles by the use of a thermometer?

A. I tested it by a thermometer.

Q. 47. Did you test only one kettle with a thermometer or both kettles in this manner?

A. I tested both kettles.

Q. 48. When were such thermometer tests made? Did you use a thermometer in both kettles on the occasion of your first visit, or did you test one kettle at the time of your first visit and the second kettle when you were in the melting-room the second time?

A. I tested one on the first visit and one on the second visit.

Q. 49. Please state how thorough a thermometer test you made, as to the temperature of the contents of these kettles.

A. I held the thermometer in about five minutes, so as to be sure of the heat or temperature each time.

Adjourned until 10 o'clock a. m., Friday morning, May 11, 1883.

108 FRIDAY, *May* 11, 1883—10 o'clock a. m.

Parties met pursuant to adjournment.

Present: Same as before.

Q. 50. You have testified that you tested the temperature of the melted oleomargarine stock which you examined in the kettles at the establishment of the Fairbank Canning Company by the use of a thermometer, one kettle having been tested at the time of your first visit and the other kettle at the time of your second visit, about an hour later. Will you please state the temperature of this oleomargarine stock as thus ascertained by you?

A. 120° Fahr.

Q. 51. Did you find it to be the same in each kettle?

A. Yes; almost the same; it was not perceptible, the difference.

Q. 52. You have testified that in your opinion the melting had been completed about twenty minutes; also that you found the temperature of the stock 120° Fahr. Please state, in view of your long experience in connection with the manufacture of oleomargarine stock and oil, how much, to the best of your judgment, the temperature in these kettles would have fallen from the time the melting stopped until you made the test stated by you.

(Same objection as to question 44.)

A. I don't believe it would go down any.

Q. 53. Please give, if you can, any reason why you think there would not have been any perceptible decrease in the temperature from the time the melting in the kettles had stopped until you made the test stated by you.

A. I believe the hot water in the jackets would retain the heat.

Q. 54. Did you examine or taste or smell of this oleomargarine stock which you found in these kettles and the temperature of which you tested?

A. Yes; I both smelled and tasted of it.

Q. 55. Can you or can you not, because of your experience in this line of manufacture, tell by careful examination of oleomargarine stock about the temperature or degree of heat at which the same has been melted?

A. I can't exactly go within a few degrees of it. I can go pretty close on it.

109 Q. 56. In view of your experience and of the examination and test which you made of the melted stock in the kettles at the Fairbank Canning Company's establishment, please give your best judgment as to the temperature at which the fat used in making this stock had been melted.

(Same objection.)

A. From 118° to 120° Fahr.

Q. 57. Of what kind of animal fat had this melted stock been made or produced?

A. Beef fat.

Q. 58. What did you find to be the quality of this oleomargarine stock which you examined in these kettles at the factory of the Fairbank Canning Company?

A. Very good stock.

Q. 59. Was or was not this stock which you examined free from any disagreeable tallowy taste or smell?

A. It was free from any disagreeable tallowy taste or smell.

Q. 60. Was or was not this oleomargarine stock thus examined by you suitable in your opinion, for the use of butter purposes?

(Objected to as leading.)

A. It was suitable for butter purposes.

Q. 61. State how this oleomargarine stock which you thus examined and tested would compare with the stock made at the Jersey City establishment of Mr. Wilson, at the factory of the Commercial Manufacturing Company, New York, at the factory of George H. Hammond & Company, Hammond, Indiana, and by the National Dairy Company at Chicago, where you have been employed, as stated, and where the stock made was intended, as you have testified, for use in the manufacture of butter.

(Objected to as immaterial, irrelevant, and incompetent, and protest is here made against the attempt in this and preceding questions to introduce into the record testimony as to the process and operations of the firm of George H. Hammond & Company, of Hammond, Indiana, who are not parties to this suit, but who have
110 been and are now threatened with prosecution by the complainants for the alleged infringement of the said patent, and notice is hereby given that motion will be made at the hearing to strike out all such testimony.)

A. Well, I consider the stock examined as good as any made in either of those places.

Q. 62. Are you familiar with the temperature followed in the melting of beef fat for the production of oleomargarine oil at the various establishments where you have been employed?

(Same objection.)

A. I am.

Q. 63. How does this temperature at which you have testified it was your judgment this stock which you examined at the Fairbank Canning Company's establishment had been melted compare with the temperature followed during melting at the factory of the National Dairy Company, also the factory of the Commercial Manufacturing company, during the period of your employment at these places?

(Same objection.)

A. About the same temperature.

Q. 64. You have testified that in your judgment, based upon your experience of many years, that the melting in the kettles of the Fairbank Canning Company had, at the time you made the test and examination stated, been completed in each instance about twenty minutes. Will you now state or explain how you are able to form a judgment as to the length of time which had elapsed since the melting had stopped?

A. From the rough and unsettled appearance of the stock in the kettles.

Cross-examination by T. S. E. DIXON:

C. Q. 1. The substance which you have testified that you examined in the kettles at the Fairbank Canning Company's was nothing more or less than melted beef fat, still in a melted condition, was it?

A. It was beef fat in a melted condition.

C. Q. 2. And that was all, was it not?

A. That was all.

111 C. Q. 3. And whenever you have used the term "oleomargarine stock" in your testimony this is the substance to which you referred?

A. The same as was in the kettles.

C. Q. 4. In melting beef fat in these kettles the fat is not always kept at a single fixed degree of temperature, but it sometimes runs up or down 2° or 3° or more at different times during the whole melting, does it not?

A. It may go up or down a little ways; you can't hold the steam stationary.

C. Q. 5. Then, when you entered that establishment, twenty minutes after the fat in these kettles had been entirely melted, you had no personal knowledge of the exact temperature or of the fluctuations in it that had prevailed during the melting?

A. No.

C. Q. 6. Any statement by you as to such temperature or of the fluctuations in it would be merely a guess, since you were not present at the melting and had no personal knowledge of the fluctuations that had taken place?

A. I had no knowledge of it, of course.

C. Q. 7. You say you have had practical experience for a number of years in melting beef fat into what you call oleomargarine stock. In the practice of this work has it been your effort to melt the beef fat at the lowest possible temperature?

A. Our effort was to go as close as we could to 120°.

C. Q. 8. Why didn't you try to melt it at 117° or 118°?

A. That was our orders.

C. Q. 9. Were you at any time during your experience in charge of the melting operation?

A. Yes.

C. Q. 10. Did you never melt a kettle of fat when the temperature didn't run above 118°?

A. Sometimes; very seldom.

C. Q. 11. State the circumstances under which you have melted them at 118°.

A. When the melting of the kettles was finished and settled, showing 118°, I then drew the stock off the kettle.

112 C. Q. 12. Do you know whether the temperature had risen above 118° at any time during the melting?

A. Well, I don't know; but it isn't necessary by close watching.

C. Q. 13. Is this the lowest temperature at which you had ever melted a kettle of beef fat?

A. Well, some at 117°.

C. Q. 14. When the temperature did not run above 117° at any ime during the process?

A. No; it hasn't got above 117°.

C. Q. 15. What is the lowest temperature in practical working at which you can make a kettle of beef fat and the temperature not rise above that point at any time during the melting?

A. 120° in practical work.

C. Q. 16. Then the kettle which you melted at 117° didn't give good results? And explain the defect.

A. I didn't say it didn't give good results.

C. Q. 17. What is the purpose of the paddles that you mentioned as being in the kettles and stated were driven by steam?

A. To agitate the fat and thereby keep uniform heat in the fat during the course of the melting.

C. Q. 18. What would be the result if they were not employed?

A. I don't think the fat could be melted properly without them.

C. Q. 19. The complainant, The National Dairy Company, for whom you work, melt their fat in the kettles without the addition of gastric juice or any portion of the stomach of a sheep or calf, do they?

A. I can't answer that question. I don't superintend the melting. I know they don't use it.

C. Q. 20. Why don't they use it?

A. I don't think it's good for the purpose. They are opposed to anything like it.

C. Q. 21. Have you ever made any affidavits relating to process of treating fat by any persons, firms, or corporations?

A. Yes; I made an affidavit stating what I saw at the Fairbank Canning Company.

113 C. Q. 22. At what hour of the day did you make your visits to their establishment?

A. First, I think, was between 8 and 9, and the other an hour afterwards—near or about 10.

C. Q. 23. Who were present at either of these visits?

A. Horace Manley and Hugh McAllister.

C. Q. 24. Is this the Horace Manley whose deposition has just been taken?

A. I don't know as he has been examined.

C. Q. 25. Were you not informed by Mr. Manley that he had been here testifying in this case?

A. He told me he was here.

C. Q. 26. Who belonging to the establishment were present at the time of your visits?

A. The only man I saw was John Connolly.

C. Q. 27. The John Connolly who is now working for the National Dairy Company?

A. Connolly ain't there, to my knowledge.

C. Q. 28. There is no John Connolly working in the establishment of the National Dairy Company?

A. Not that I know of.

C. Q. 29. If he was working in the establishment of the National Dairy Company you would know it, wouldn't you, knowing him personally, having met him at the establishment of the Fairbank Canning Company?

A. Yes.

C. Q. 30. How long have you worked for the National Dairy Company?

A. I think it's since last September.

C. Q. 31. Mr. Dickson is one of the principal men in that company, is he not?

A. I have heard so.

C. Q. 32. Has John Connolly worked in that establishment since you went there last September?

A. He has.

C. Q. 33. When did he leave it?

A. I think within the last two weeks.

C. Q. 34. Do you know where he has gone?

A. I do not.

C. Q. 35. Did you use a thermometer that you carried with you or one belonging to the establishment you visited in testing the temperature of the kettle?

114 A. One I carried with me.

C. Q. 36. Was there any objection made on the part of any one in the establishment to your making full and free examination of everything there and testing the temperature of the kettles in a five-minute test?

A. No.

And thereupon an adjournment was taken until Saturday morning at 10 o'clock a. m., May 12, 1883.

SATURDAY, *May* 12, 1883—10 o'clock a. m.

Met pursuant to adjournment.

Present: Same as before.

Redirect examination by H. S. TOWLE:

R. D. Q. 1. When asked by the counsel for the defendants whether the National Dairy Company melted their fat without the addition of gastric juice or any portion of the stomach of a sheep or calf, and you replied that they did not use it, and that "they are opposed to anything like it," what knowledge have you in reference to any

opinion or views which may be entertained by the officers of the National Dairy Company in reference to this matter?

A. I have none whatsoever.

R. D. Q. 2. When asked the question just referred to, relating to the use of gastric juice or portions of the stomach of the sheep or calf, what did you understand this question to mean?

A. I understood it to mean that oleo was to be made from it.

R. D. Q. 3. In reply to one of the cross-questions asked you you testified that on making an examination of kettles of oleomargarine stock twenty minutes after the melting had ceased you could not tell the exact temperature followed during melting or the fluctuations which might have prevailed. Could you or could you not, from your long experience, tell by an examination of oleomargarine stock, such as you made of the stock which you found in the
115 kettles at the Fairbank Canning Company, whether the same had been melted at a low temperature?

A. I could tell, I believe, these kettles had been melted at a low temperature?

R. D. Q. 4. You stated during your cross-examination that the lowest temperature at which you had ever melted a kettle of oleomargarine stock was 117° Fahrenheit. What, in your judgment, based upon your experience, would be the effect as to taste and smell, also as to the quality of the stock, if melted at a temperature less than 117° Fahrenheit?

(Objected to because calling for a mere guess upon a hypothetical question.)

A. I believe the quality would be better and the taste and smell better.

JOHN LEO.

Subscribed and sworn to before me this 12th day of May, A. D. 1883.

FREDERICK C. GOODWIN,
Notary Public.

[SEAL.]

UNITED STATES OF AMERICA,
Northern District of Illinois, } ss:

I, Frederick C. Goodwin, a notary public in and for the county of Cook and State of Illinois, and residing in Chicago, in the northern district of Illinois, do hereby certify that the foregoing depositions of John Connolly, Horace Manley, and John Leo were taken before me pursuant to notice hereto attached in the cause in the caption hereto entitled.

That the said depositions were taken on behalf of the said complainants in said cause, and that the said witnesses were each by me duly sworn to testify the truth, the whole truth, and nothing but the truth in said cause, and the deposition of each of said witnesses was reduced to writing in the presence of the witness and of coun-

sel for the parties therein noted as present and read over to
116 the witnesses, who, each of them, in my presence subscribed the same as and for his deposition in said cause.

In witness whereof I have hereunto set my hand and official seal this 12th day of May, A. D. 1883, at Chicago, in said county and State aforesaid.

FREDERICK C. GOODWIN,
Notary Public.

Circuit Court of the United States, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
THE FAIRBANK CANNING COMPANY.

To Messrs. Hill & Dixon, counsel for defendant.

GENTLEMEN: You are hereby notified that on Thursday, November 15, 1883, at ten o'clock a. m., at the office of Valencourt St. Lilie, notary public, No. 18 Exchange Place, in the city of New York, we shall proceed to take testimony of witnesses in behalf of the complainant in the above-entitled cause. You are invited to be present and cross-examine the witnesses.

New York, November 13, 1883.

OFFIELD & TOWLE,
Counsel for Complainant.

We hereby admit service of a copy of above notice this 13th day of November, 1883.

HILL & DIXON,
Counsel for Defendant.

117 Circuit Court of the United States, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
THE FAIRBANK CANNING COMPANY.

Examination of Witnesses on the Part of the Complainants in the Above-Entitled Case.

Met pursuant to the notice hereto attached.

Present: C. K. Offield, Esq., counsel for complainants; T. S. E. Dixon, Esq., counsel for defendant.

Complainants having no witness present, an adjournment was taken to November 16th, at ten o'clock a. m., at the same place.

NEW YORK, *November* 16, 1883.

Met pursuant to adjournment.

Present: Counsel as before; and thereupon complainants call as a witness on their behalf GEORGE B. DOUGLAS, who, being first duly

sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. George B. Douglas; age, fifty-six years; I reside in Brooklyn, New York; commission merchant.

Q. 2. Is it any part of your business as commission merchant to buy and sell butter; and, if so, how extensively does this form a part of your business?

A. Yes; that is part of my business, to sell butter; it is a large part of my business.

Q. 3. For how long a time have you been engaged in business as a commission merchant? And please state whether or not you have bought and sold butter as a part of such business during the whole of that time.

118 A. I have been engaged in that business for nearly thirty years, and have bought and sold butter during that period, largely.

Q. 4. At what place or places have you carried on your business as commission merchant, say since the year 1849 or 1850?

A. In the city of New York all the time.

Q. 5. Will you please state how familiar you have been with the butter trade, especially in the city of New York, during that time?

A. I have largely bought and received on commission for sale the various grades of butter made in the various States of the Union and Canada where butter is produced, and sold the same.

Q. 6. Not desiring, Mr. Douglas, to inquire into your business affairs, but, if there is no objection, I should like to have you state how your business as commission merchant, with special reference to the butter trade, and covering in period of time the last thirty years, will compare generally with your compeers in the same line of industry during the same period of time.

(Objected to as immaterial.)

A. A large portion of that time firms of which I have been a member have been among the leading concerns in the business, being among the largest receivers of butter in New York city.

Q. 7. Are you familiar with the product now known or so called or designated by the name oleomargarine? And, if so, please state when and where you first became familiar with that product.

(Objected to as immaterial and irrelevant unless counsel shall define what he means by the term "oleomargarine.")

A. I am acquainted with its character. I first knew it in the city of New York about five or six years ago.

Q. 8. At the time you first became acquainted with this product called oleomargarine will you please state how it was then considered by the trade, especially the butter trade, as to its being a new or old product or discovery?

(Objected to as immaterial, irrelevant, and incompetent.)

A. It was regarded by the trade as an entire novelty.

119 Q. 9. Have you intended to state by your testimony that you have been continuously connected with the butter trade in this city during the thirty years last past or only intermittently?

A. I have been connected with the trade the whole time excepting about two years from 1875 to 1877, when I had less connection than at the time before succeeding that covered by the testimony; still I was connected with it, but not so largely.

Q. 11. Have you ever handled oleomargarine as an an article of commerce in this county? And, if so, please state in what exact form you dealt in it.

(Same objection as to question 7, and the like objection is made to all questions relating to what the counsel terms "oleomargarine.")

A. Yes; I have handled it. We have both bought it and sold it on commission.

Q. 12. When for the first time did you buy and sell oleomargarine?

A. Within the last two months.

Q. 13. From what is oleomargarine produced?

A. I understand it to be produced from the best part of the fat of the ox expressed from the fat. I have seen the process.

Q. 14. In your opinion, please state whether oleomargarine, when kindly and rightfully produced, is or is not a palatable and wholesome article of human food.

A. Well, I don't know anything to the contrary. I believe it to be wholesome as butter, and much more so than a large portion of the butter produced.

Q. 15. You believing oleomargarine to be a wholesome article of human food, why was it that you neither bought nor sold it in connection with your business until within two or three months last past?

A. It would require a pretty considerable time to answer that question. My firms have always been conservative and, being thoroughly acquainted with and receiving large quantities of butter, have had but little occasion to look for and sell any of the substitutes. My partners have been urgent to deal in oleomargarine, but I have always objected until recently. The demand from

120 our customers for oleomargarine has compelled an assent on my part.

Q. 16. Will you please state in this connection, somewhat in detail, the effect which the discovery and production of oleomargarine in this country has had upon the butter trade.

A. Do you mean the dealing in it or the people in it, when you speak of the trade?

Q. 17. Well, say upon both?

A. The people engaged in the butter business were variously affected. A large number thought that the presence of this article on the market would injure the dairy or butter interest; another portion, and the minority at first, regarded the sale of the goods with favor and believed that the production should be encouraged. This

state of things existed about four or five years ago, when oleomargarine first largely attracted the attention of the trade. Some people believed that as a product of an industry it had a right to live, regardless of any dealings in the article, while the great majority at that time sought to repress it by legislative action. Since then the former have become the majority, and a large number of those most opposed to it as an article of commerce are now glad to deal in it and handle all they can. The sale of oleomargarine and its presence in the market in greater or lesser quantity, at various times, has caused fluctuations in the value of butter; it has largely depressed at periods the value of inferior and medium grades of butter, but has only slightly affected, if at all, the value of the finest butter. At one period within the last four or five years oleomargarine was the only article representing butter that could be found on the wholesale market at a less price than 22 to 24 cents a pound, and at that price the butter was very inferior. During the past four or five years since oleomargarine has been largely an article of commerce the finest butter, during the winter months, has sold at a higher price, for gold, than for a great number of years previously.

Q. 18. Is the manufacture and sale of oleomargarine on the increase or decrease, as an article of commerce in this country or as an export?

121 A. I am not so familiar with the increase of the business as to state with certainty, but I believe that the sale and use of oleomargarine, or what is called butterine or suine, is largely on the increase.

Q. 19. Will you please state whether oleomargarine is or is not an established or well recognized factor at the present time in the trade of this country and in the world of commerce?

A. I regard it as such.

Q. 20. Which product is the best adapted for transportation and for retaining its wholesome and palatable constituents for the longest space of time or for long voyages, under variable differences of climate, the natural butter or olemargarine?

A. I don't think I am competent to answer that question, I have had so little experimental knowledge. I can tell you about butter, if that is of any importance.

Q. 21. What organization in this city represents the commerce to which the butter trade of this city belongs, and are you a member or officer of such organization?

A. The New York Produce Exchange and the New York Mercantile Exchange recognize that branch of the business, but I am not at present what is called an officer, technically, but I am a member of both organizations and chairman of a committee of each.

Q. 22. Will you please state whether this product of oleomargarine is quoted or recognized or called, if that is the term used in both of these organizations, as a food product and an article of commerce?

A. It is recognized, called, and the subject of rules and regulations by the New York Mercantile Exchange, but I do not think it is so

recognized by the New York Produce Exchange; it may be, but I do not think it is.

Q. 23. Is not the New York Mercantile Exchange a reorganization or successor of or a growth out of the old Butter and Cheese Exchange?

A. It is the same organization as the butter, cheese, and egg exchange, its present name having been adopted within the past two years.

Q. 24. Has or has not oleomargarine an equal call on that exchange with butter and governed by the same rules?

122 A. Both articles are subject to a daily call on the exchange, each having its appropriate rules.

Q. 25. Why was oleomargarine given a recognition and a call on the mercantile exchange?

(Objected to as immaterial, irrelevant, and incompetent.)

A. Because it was required by the members of the exchange dealing in the article.

Q. 26. Are you the Mr. Douglas who is now the president of the International Dairy Fair Association?

A. I am.

Q. 27. As president of that association, do you or do you not recognize oleomargarine as a new product of human food, now well established as an article of commerce?

(Objected to as immaterial, irrelevant, and incompetent.)

A. I do, and will add that at the last International Dairy Fair oleomargarine was exhibited.

Q. 28. Was oleomargarine recognized by either the New York Mercantile Exchange or the International Dairy Fair Association as an article of human food or as an article of commerce before the merits of the product itself forced such a recognition?

(Same objection.)

A. It was not so recognized until after the period stated in a former interrogatory, when the trade was so divided in their views.

Cross-examination by Mr. DIXON:

C. Q. 1. It appears from your answer to question 15 that you have always objected, while your partners have been willing to deal in oleomargarine, until about two months ago, when your firm commenced to deal with the article. Please state at length the objections which you urged to your partners against dealing in the article.

A. This was a new article, and we were unfamiliar with the goods, and as we had a large business with other dairy products besides butter, these occupied our attention, and I did not feel like extending the business so as to take in goods with which we were only partially acquainted.

123 C. Q. 2. What other objection did you make at any time to dealing in oleomargarine?

A. It was my desire to wait and see how far the goods would as-

sume regular methods as an article of commerce, and to gauge somewhat the prospect of remuneration.

C. Q. 3. What other objection at any time?

A. No other that I remember; they were purely business considerations.

C. Q. 4. But had not the goods assumed "regular methods as an article of commerce" three years ago—in 1880?

A. Yes—tolerably so—more three years before that.

C. Q. 5. Then it was for other reasons that you made objections for the last three years?

A. No others than those already stated in the previous answers.

C. Q. 6. In your testimony, where you have used the term oleomargarine or where you have stated that you had dealt in this article, you mean what is known in the trade as oleomargarine butter?

A. Yes, sir.

C. Q. 7. You have stated that you are now familiar with the butter trade and also *of* the sale of what is called butterine or suine is largely on the increase. The article now known to the trade as butterine is understood to be a mixture of refined lard and butter, is it not?

A. There are two interrogatories there. I answer to the first, yes; to the last, that suine or butterine is understood to be an admixture of the oil of lard deodorized and butter.

C. Q. 8. The best brands of this butterine made from the oil of lard and butter form a palatable article of food, do they not?

A. They do.

C. Q. 9. They are now put upon the market? They command a somewhat higher price than oleomargarine butter, do they not?

A. Well, that depends upon the proportion of butter and the original quality and high flavor of the butter. The best brands of
124 butterine bring a higher price on the market than the usual run of the receipt of oleomargarine.

C. Q. 10. This quality of butterine to which you have referred is of comparatively recent introduction to the trade, is it not?

A. Yes; it is.

C. Q. 11. It is regarded by the trade as a novel article, and has made considerable stir, has it not?

A. I have known it as existing for the last two or three years, and its presence on the market has excited great interest in the trade.

C. Q. 12. But while this article is new to the trade within the last two or three years, have there not been experiments made years ago in the admixture of lard and butter?

A. I have no knowledge in regard to that that I can recall.

C. Q. 13. But this butterine made as you have stated is a very different article from that produced by a mere admixture of lard and butter, is it not?

A. I don't know that I ever saw a mixture of lard and butter, but my judgment is that there would be a difference.

C. Q. 14. And this difference would result from the different processes employed in the two cases?

A. There would be an element in the one case that would not exist in the other. Where lard is used there would be the usual

quantity of stearine. While oil is employed the stearine is supposed to be eliminated.

C. Q. 15. You have stated that butterine made from lard, oil, and butter was new to the trade within the last two or three years, and that oleomargarine butter first attracted largely the attention of the trade four or five years ago. Now, just as this butterine is a new article, produced by new and approved processes, can you state that what is known to the trade as oleomargarine butter, introduced as you have stated, was not a new article introduced by new and improved processes, differing from any experiments that may have been made to utilize beef fat nine or ten years ago?

(Objected to as not cross-examination and as assuming as a fact that concerning which the witness is not testifying.)

125 A. I am not acquainted with the process or the improvement which may have been made in the production of butterine. That is all I know about that, in answer to that question.

C. Q. 16. Has not the creamery system of making butter been quite generally introduced within the last few years?

A. Probably within the last ten or twelve years.

C. Q. 17. It has largely increased of late years, has it not?

A. It has.

C. Q. 18. It has become more profitable for the farmer to have his milk used in the creamery system than to have it used in the old form of milled and ladled butter?

A. In the States where butter is gathered from the farmers and then milled or ladled the creamery system undoubtedly yields larger returns to the farmer.

C. Q. 19. And the wide introduction of this system has tended to diminish the production of the inferior and less profitable grades of butter, has it not?

A. It has.

G. B. DOUGLAS.

Subscribed and sworn to before me this 17th day of Nov., 1883.

V. A. LILLIE,
Notary Public.

Cert. filed in N. Y. Co.

Adjourned to Monday, November 19, at 10 a. m.

MONDAY, *November* 19, 1883.

Met pursuant to adjournment.

Present: Counsel as before.

Complainants having no witness present, an adjournment was taken to 2 p. m., at the same place.

Met at 2 p. m., and adjourned to Nov. 20, 1883, at 10 a. m.

126 NOVEMBER 20, 1883—10 a. m.

Met pursuant to adjournment.

Present: Same as before.

And thereupon complainants' counsel calls EDWARD G. BYRNES as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. Edward G. Byrnes; I am forty-one years of age; I reside in New York city, and I am a retail grocer by occupation.

Q. 2. How long have you been in the retail grocery business in the city of New York and its immediate vicinity?

A. About sixteen years.

Q. 3. If your trade or business as a retail grocer has been directed to or confined to any particular class or classes of citizens, please state what class you have made a specialty in the carrying on of your business.

A. Almost entirely amongst the working or laboring class.

Q. 4. Not wishing to inquire into the details of your business, but, if there is no objection, I would like to have you state generally and approximately the extent of your business per year among the working classes, and compare your business per year with that of the largest grocery dealers in this city or country who make a specialty of catering to the same class of trade as yourself.

A. I sell in the neighborhood of four or five hundred thousand dollars' worth of goods per year. I believe that I sell more goods at retail than anybody in my particular line, and have for the last ten years.

Q. 5. Is it any considerable part of your business as a retail grocer, and has it been from the beginning of your trade, to buy butter and sell it to your customers?

127 A. I have done a very large butter business. A part of the trade I sell to use bread and butter very extensively.

Q. 6. What class of butter, as to its organization and composition, have you bought and sold to your customers principally during that time? I speak now only of natural or cow butter.

(Objected to as immaterial.)

A. In the first commencement of my business I sold every kind of butter, from the most common kind up to the best. For the last six or seven years I have not been able to sell any common butter at all.

Q. 7. Are you familiar with the product now manufactured in this country and sold under the name of oleomargarine? And, if so, please state when and where you first became acquainted with it.

(Objected to as immaterial, unless counsel shall further define the term oleomargarine, and the same objection is made to all other questions relating to the term oleomargarine.)

A. I am acquainted with it and have been since it was first in-

troduced. I saw it first at H. K. and F. B. Thurber's butter department.

Q. 8. At the time oleomargarine was first introduced in this city, please state how it was considered by the trade, as to its being a new product or discovery.

(Objected to as immaterial, irrelevant, and incompetent.)

A. I considered it a new product; I had never heard of it before. When it was introduced to me by that house that was the first I had heard of it.

Q. 9. Please state whether or not you have handled oleomargarine as a part of your grocery business, and how extensively and for how long past.

A. I have, very largely. I think it is about seven years since I commenced to sell it.

Q. 10. How extensively has oleomargarine supplanted in your sales the kind of butter which you formerly sold to the working class as comprising your trade?

(Objected to as leading.)

A. About three-fourths of the quantity I sell is oleomargarine. They take it in preference to the medium grades of butter offered to them at the same time.

128 Q. 11. How about the price of the two butters offered them—oleomargarine and medium-grade butter?

A. They are both the same price.

Q. 12. In your opinion is or is not oleomargarine a healthful, wholesome, palatable, and nutritious article of human food?

A. I believe it is, or else I would not sell it.

Q 13. Please compare oleomargarine, rightly made, with the ordinary grades, composition, or organization of cow butter, which you sold so largely to the working classes before its introduction, and state which of the two articles is the most healthful and palatable, and please give your reasons somewhat in detail for any opinion you may express.

A. It is very difficulty for me to tell anything about the organization or composition of oleomargarine. I know the trade like it better; it is sweeter and keeps better, and does not become rancid, as the poorer grades of butter will when exposed to the air. I have repeatedly sold dairy butter accumulated on my hands, and they have invariably brought it back the next day and rejected it, it having become rancid.

Q. 14. How about oleomargarine being returned to you?

A. It is very rarely returned, and only then when it has been made poor by the parties I purchased it from.

Q. 15. Please state whether or not your customers exercise their own choice in selecting the two kinds of butter before them.

A. Except the very finest, they take oleomargarine invariably in preference.

Q. 16. Will you please state, in your opinion, what effect the discovery and introduction of oleomargarine has had upon the butter

trade in this country? And give your opinion more especially to the poorer or medium grades of butter which you sold to your customers.

(Same objection.)

A. It has had the tendency of compelling the manufacturers of butter to make it better, as the common grades do not sell.

Q. 17. About how many tubs of oleomargarine do you sell per week during your busy season?

129 A. About 150 tubs per week.

Q. 18. Has the trade in oleomargarine increased or decreased since you first became familiar with that product, and is it now on the increase or decrease?

A. It has increased very largely, and it continues to increase.

Q. 19. Is or is not oleomargarine an established article of commerce now in this country?

A. I so consider it, and I do not think it possible to get along without it now. Fine butter to-day would cost a dollar a pound, in my opinion, if it was not for oleomargarine.

(The last portion of the above answer is objected to as a mere expression of opinion or guess and as not responsive to the question and volunteered by the witness.)

Q. 20. Is there any way for the ordinary purchaser of oleomargarine to distinguish it from sweet and palatable butter, or, rather, can your ordinary customers so distinguish it?

A. No, sir; I do not know of any.

Q. 21. If you know, please state what forms the substance or body of oleomargarine.

A. It is made from oil of beef fat or suet churned with milk or cream.

Cross examination by Mr. T. S. E. DIXON:

C. Q. 1. The wide and general introduction of the creamery system during recent years has made it more profitable for the farmer to have his milk made into fine butter under this system than into the poorer and common grade of butter, of which you formerly sold so much, has it not?

A. I cannot answer as to the profits in the matter. All I know is that the demand is for strictly fine butter, as oleomargarine seems to take the place of the common.

C. Q. 1½. Do you know that the same quantity of milk made into butter under the creamery system brings a higher price to the farmer than if it was made into the old "milled" or ladled "butter," constituting the common or poorer grades of butter.

130 A. I should judge it would be more profitable. In this State we do not make much milled butter.

C. Q. 2. As it is more profitable the wide introduction of the creamery system has tended to reduce the amount of inferior or poor butter offered upon the market, especially in this State, has it not?

A. It has tended to reduce the amount made, but not offered, be-

cause creameries held for higher prices; does not keep as well as dairy butter in my opinion.

C. Q. 3. And so, in your opinion, being thus inferior to dairy butter, it generally commanded a less price in the market than ordinary dairy butter, does it?

A. I did not say it was inferior. I said its keeping qualities were not as good, and in my opinion what enhances the value of creamery butter over dairy butter is its uniformity in quantity for immediate use.

C. Q. 4. Then, after all, the price of creamery butter is enhanced over that of dairy butter, is it not?

A. Yes, sir.

C. Q. 5. You said, in answer to cross-question two, it has tended to reduce the amount made, but not offered. What do you mean by "offered?"

A. I mean offered for sale in this city.

C. Q. 6. Then the amount of inferior or poor butter offered upon the market, referred to in question two, to which your answer was made, is just as great in this city as it was some years ago, is it?

A. The trade here all have ice-houses now, which has tended to occasion more butter to be held for higher prices or speculated in; thus fine creamery butter has spoiled very often, as butter taken off of ice does not keep as well to retail afterwards.

C. Q. 7. You have not answered my question. Is the amount of inferior or poor butter offered upon the market in this city at the present time just as great as it was some years ago, in view of what you have stated above about there being no reduction in the amount "offered?"

A. I do not believe that the amount of poor butter in the market has decreased. The market is glutted with common goods at the present time.

131 C. Q. 8. Then, notwithstanding the introduction of what is termed oleomargarine, it is a fact, as you have just stated, that the amount of poor butter in the market has not decreased and the market is glutted with common goods at the present time?

A. Yes, sir; I think oleomargarine is the cause of it; it sells in preference to common butter.

C. Q. 9. But, all the same, the common butter is not driven out of the market yet?

A. No, sir.

C. Q. 10. What price have you paid during the past summer for the bulk of the oleomargarine butter purchased by you during that time?

A. About thirteen and a half cents per pound to fifteen cents.

C. Q. 11. Where you have used the term oleomargarine and testified in regard to your dealings in it have you meant what is known in the trade as oleomargarine butter?

A. Yes, sir.

C. Q. 12. About what proportion of the butter sold by you to your customers is of the very finest or highest priced butter in the market?

A. A small proportion.

C. Q. 13. About what fraction or proportion?

A. About one-eighth.

C. Q. 14. You have stated that three-fourths of the butter sold by you for the last few years was oleomargarine butter, and that the very finest butter was one-eighth of your sales. Then your customers could not have invariably taken oleomargarine in preference to other butter except the very finest, as stated by you in answer to question 15, could they?

(Objected to for the reason that the witness stated in this same connection that his customers invariably took it at the same price, and for this reason the last testimony neither represents the testimony of the witness nor the fact.)

(Counsel for defendant objects to the "answer" to the above question just given to the witness by counsel for complainants, and as to the question of fact refers to the record of question 15 and the answer.)

132 A. Yes, because I had the greater portion of the time. Every alternate package was creamery or dairy butter, and customers could select which they wanted—take the oleomargarine in preference, except strictly fine butter.

C. Q. 15. The one-eighth of your sales having been the very finest butter and three-fourths oleomargarine butter, the customers who took the other one-eighth of your sales in other butter did not take it from preference, did they?

A. Yes, sir. They would taste each one along the counter. The dairy butter would remain on the counter, and I would have to sell it cheaper. It would become stale standing there.

C. Q. 16. Then of late years you have not sold any dairy butter or any except that was stale. Is that the fact?

A. No. I have sold some creamery, but when it was right fresh it was sold. After awhile they took the oleomargarine in preference at the same price.

C. Q. 17. Then, if I understand you aright, when the real butter held by you was sweet and wholesome you could sell it, but your customers preferred to buy oleomargarine butter to taking any stale butter such as you have described as having in your store?

A. I did not say so. I said good, fresh, rosy butter they would take in preference, but the medium grades are sweet and wholesome.

Redirect by Mr. OFFIELD:

R. D. Q. 1. How many pounds weight constituted one of these tubs of oleomargarine which you have described as selling and keeping for sale to your customers?

A. About fifty pounds.

Cross-examination resumed by Mr. DIXON:

C. Q. 18. When was it you first saw oleomargarine at Mr. Thurber's?

A. I think about 1877 or 1878.

133 C. Q. 19. Dealing so extensively in butter as you have during the last sixteen years, if oleomargarine had been on the market to any extent before the time you have mentioned you would have been likely to have known of it, would you not?

A. I think I would. I heard of it some time before I commenced to use it.

C. Q. 20. You testified you first heard of it when you first saw it at Thurber's, have you not?

A. I don't know. I heard of it at Thurber's. I may have heard of it once or twice before. I first heard of it about that time.

EDWARD G. BYRNES.

Subscribed and sworn to before me November 20, 1883.

V. S. LILIE,
Notary Public, Kings County.

Certificate filed in New York county.

Adjourned to 7.30 p. m. at the Brunswick Hotel, room 4.

Met at 7.30 p. m., pursuant to adjournment.

No witness being present, the hearing was adjourned to November 21st, at 10 a. m., at room 228, Astor House.

NOVEMBER 21, 1883.

Met at 10 a. m., pursuant to adjournment.

Adjourned to 2 p. m.

Met at 2 p. m., pursuant to adjournment.

Present: Same as before.

And thereupon complainants called JOHN ANDERSON as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories propounded by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. John Anderson; age, about fifty years; residence, New York city; occupation, merchant.

134 Q. 2. What particular branch of merchandise do you handle?

A. Provisions and dairy products—butter, cheese, and oleomargarine.

Q. 3. How long have you been engaged in this business in the city of New York and its immediate vicinity?

A. I have been in business in New York about twenty-four years.

Q. 4. If you have no objection, please compare your business in extent and value of commodities handled with that of the largest merchants in the same line of industry in this city or county.

A. As far as the dairy products is concerned we were the largest until the last two years. As to the oleomargarine we are much the largest exporters and have been for years; within the last two years moderate business in dairy products.

Q. 5. For how long have you handled oleomargarine as part of your business and trade?

A. Commenced exporting in 1878.

Q. 6. When did you first become familiar with oleomargarine as a product and how was it then considered as to its being a new or an old product discovered?

(Objected to because immaterial, irrelevant, and incompetent.)

A. Oleomargarine was first brought to my attention between 1870 and 1875; considered entirely new and a great novelty at that time.

Q. 7. Please state approximately, if there is no objection, the extent and value of your business per year.

A. Until within the last two years was between three to five million; last two years considerable less.

Q. 8. Please state whether or not the growth or increase in the trade of oleomargarine has been slow or rapid, and illustrate such growth from your business, if there is no objection.

A. It has been rapid. Illustrated: In 1878 shipped 1,500 *hundred* tubs of oleomargarine; 1879, about 2,500; from 1880 up to date, from 40,000 to 50,000 per year. The size of the tubs averaged about thirty-five pounds, and since then about twenty-eight pounds; value thirty-five pound tub, about five dollars; twenty-eight pound tub, about three dollars and a half.

Q. 9. From what is the product of the oleomargarine derived?

A. Fat from bullocks and cattle.

Q. 10. Please state whether or not oleomargarine is a wholesome, palatable, and nutritious article of human food and how it is considered by the trade.

A. I consider it so, and the trade also.

Q. 11. What use was made of the fat of bullocks and cattle in this country prior to the introduction or discovery of this new product of oleomargarine?

(Objected to as immaterial.)

A. Used for making into tallow.

Q. 12. Mr. Anderson, will you please state the reason, in your opinion, for the vast sales and rapid increase as an article of commerce of this new product of oleomargarine?

A. Well, one reason is that the low price to which it can be sold as compared with butter at the same price, oleomargarine being sweet, clean, and palatable, while butter selling at the same price will be stale, old, and unpalatable.

Q. 13. Is or is not oleomargarine now a permanent and established article in this country and foreign countries?

A. Permanent fixture on both sides of the water.

Cross-examination by T. S. E. DIXON:

C. Q. 1. When you have used the word oleomargarine in your testimony and when you have compared the same with butter have you meant what is commercially known as oleomargarine butter?

A. I don't know any commodity as oleomargarine butter.

C. Q. 2. What is the substance, then, which you compared with butter in your answer to question 12?

A. It is known in the trade as oleomargarine.

C. Q. 3. And that is what you refer to when you use the term oleomargarine?

136 A. When I referred to oleomargarine I mean oleomargarine; that is all I can answer.

C. Q. 4. From whom did you obtain your supplies of oleomargarine butter?

A. I have bought small quantities from various makers and manufacturers. My principal purchases have been made from the Easterbrook Company, of New Haven.

C. Q. 5. They are licensees under the Mége patent for New England?

A. I am so told; I don't know it of my own knowledge.

C. Q. 6. What is the average per cent. of profit you have gained dealing in this butter?

A. All my purchases are for export, and I have endeavored to make a cent per pound profit, which is divided with my correspondents in Great Britain.

C. Q. 7. Then, estimating amount handled by you per year at 75,000 tubs, averaging thirty-five pounds, — made by yourself and your correspondents this year in handling this product, would it not?

A. It would, if we succeed in our endeavors of securing the one cent per pound profit, in which we are not always successful; to our great sorrow and detriment, we have had it go the other way more than once.

C. Q. 8. And on some lots you have made more than a cent a pound, have you not?

A. I suppose we have; but we never made over a cent a pound, unless by assuming great risks in buying for future dealing.

C. Q. 9. From your knowledge of the course of trade in this product, what is your judgment as to the proportion of oleomargarine butter made in this country which has been exported in the past?

A. I have not examined into this, but should judge that last year a comparative amount of oleomargarine butter would be ten per cent. of the exports; possibly, this year, twenty per cent.

C. Q. 10. How is it with regard to oleomargarine butter you have handled?

A. Up to this date our proportion would be from sixty to seventy per cent., as compared with butter.

137 C. Q. 11. I do not have reference to other butter; but what I ask is, what proportion of oleomargarine butter handled by you do you export?

A. I export all of it; I am not a dealer.

Redirect:

R. D. Q. 1. About what per cent. a pound profit do you or have you made on dairy butter exported by you?

A. Our aim and object in the export business, either on joint account shipments or in filling orders, and as a fair remuneration, is to make four per cent. on the cost of the goods to be divided between ourselves and our correspondents; this is usual in the trade.

R. D. Q. 2. As I understand you, you have handled and have been familiar with the butter trade in your business since your beginning, some twenty years ago?

(Objected to because not inquired into on cross-examination.)

A. I have been familiar with the butter trade for thirty years or more, having been a clerk with a butter and cheese firm before I entered into business for myself.

R. D. Q. 3. You were asked if Easterbrook & Company, from whom you purchased principally your oleomargarine butter—if that company were not licensees under the Mége patent. Is not the oleomargarine butter manufactured by them manufactured under that patent?

A. I understand that it is.

JOHN ANDERSON.

Subscribed and sworn to before me November 21, 1883.

V. S. LILLIE,
Notary Public, Kings County.

Certificate filed in New York county.

138 THURSDAY, *Nov.* 22, 1883—3 p. m.

Met pursuant to adjournment.

Present: Same as before.

And thereupon complainants' counsel call as a witness in their behalf CHAS. H. JOHNSON, Esq., who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories propounded by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. My name is Chas. H. Johnson; age, fifty; residence, Montclair, New Jersey; occupation, merchant, wholesale dealer in butter and cheese, at New York city.

Q. 2. For how long a time have you been engaged at such business in New York city? And if there is no objection please state the extent and value of your business per year.

A. I have been in business over twenty-five years. I couldn't state the extent of my business. Our business has been large. Our profits range from $25,000 to $40,000 per year.

Q. 3. Is it any part of your business to handle oleomargarine? And, if so, please explain when you first became acquainted with this product, and about how extensively you have handled it.

A. I became acquainted with it seven or eight years ago. I should think during the past five years, I think, we sold 10,000 or 20,000 packages per year. The sizes run from 28 lbs. to 56 lbs. each.

Q. 4. At the time you first became acquaineed with this product,

oleomargarine, seven or eight years ago, please state how it was then considered, as to its being a new or old product or discovery.

(Objected to as immaterial, irrelevant, and incompetent.)

A. There was a decided prejudice against it at first, but as time passed on it seemed to meet with more favor.

Q. 5. Was it then considered a new or an old thing?

(Same objection.)

A. It was considered a new thing.

139 Q. 6. Please state what effect the introduction of oleomargarine has had upon the butter trade of this country?

A. It has kept down the price of natural butter.

Q. 7. In your opinion is or is not oleomargarine a wholesome and palatable article of human food?

A. I think it is more healthful than the common grades of butter, whose place it now supplies to a great extent.

Q. 8. To whom do you chiefly sell your packages of oleomargarine?

A. To wholesale dealers.

Q. 9. Which brings the higher price in the market—oleomargarine or the common and lower grades of butter?

A. The common grades of butter are lower than oleomargarine; medium grades higher.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. Where you have used the term oleomargarine and where you have said you dealt in the article have you meant what is known to the trade as oleomargarine oil or oleomargarine butter?

A. Oleomargarine butter.

C. Q. 2. What effect has the temperature, say, 90° to 95° upon oleomargarine butter?

A. It melts and liquefies.

C. Q. 3. After it is thus melted what are its characteristics?

A. It is unusable in that condition.

C. Q. 4. For what reason?

A. It seems to have no body; to be too much like an oil.

C. Q. 5. How does it taste?

A. Never tasted it in that condition.

C. Q. 6. After it is melted does it remain in oil, or does it congeal at the ordinary temperature?

A. I think it congeals at about 80°.

C. Q. 7. Is it usable as butter then?

A. It is, but it is not so good.

C. Q. 8. What is the difference between it in that state and in the original state?

140 A. It seems to have lost its freshness and appears more tallowy.

C. Q. 9. Does it have more of the tallowy smell in that state?

A. I think it has.

C. Q. 10. Are you acquainted with what is known as a tallow oil made from the tallow by pressing out the stearine?

(Objected to as incompetent and not cross-examination upon any subject-matter enquired into upon the direct examination, and the defendant's counsel is notified that in examining the witness as to the matter enquired of in the last interrogatory he makes him his own witness and will not be permitted to contradict or explain the testimony in answer to such and kindred interrogatories, and that it will so be insisted upon at the hearing of this cause.)

A. I have seen it, but have no special acquaintance with the oil.

C. Q. 11. When did you first see it?

(Last objection repeated.)

A. I think I saw the oil a little over a year ago.

C. Q. 12. Had you seen it before?

(Same objection.)

A. Not to my knowledge.

C. Q. 13. Had you seen stearine before?

(Same objection.)

A. I think not.

C. Q. 14. Then you don't know personally what has been done in the way of separating fat into its constituents in this country prior to the date of the Mége patent, in December, 1873?

(Same objection.)

A. I do not.

CHAS. H. JOHNSON.

Subscribed and sworn to before me Nov. 22, 1883.

V. S. LILLIE,
Notary Public, Kings Co.

Cert. filed in N. Y. Co.

141 NOVEMBER 23—7.30 p. m.

Met pursuant to adjournment.

Present: Same as before.

And thereupon complainant's counsel call WASHINGTON WINSOR, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. My name is Winsor; produce merchant; age, 47; and residence, New York city.

Q. 2. How long have you been in this business in the city of New York or its immediate vicinity, and how extensively does the handling of butter or dairy products form a part of your business?

A. I have been in the business in the city of New York, with the exception of four years, since 1859. For four years I was in the busi-

ness of handling dairy products in the country, but connected, however, with the New York house. Dairy products is about two-thirds of our business.

Q. 3. Will you please state what prominent associations you are connected with or have been which have for their object the regulations, control, or handling of food products, especially the products of the dairy, and state also what official positions, if any, you have held or now hold in such associations or organizations.

A. Well, I have been elected three times president of the Butter, Cheese and Egg Exchange, now the Mercantile Exchange, which is only a change of name for the same organization; I am also president of the society known as the Society for the Prevention of Adulteration of Butter in New York.

Q. 4. The first organization mentioned by you is the largest and most influential of that character in the United States, and perhaps in the world?

(Objected to as clearly leading.)

A. I believe it is.

Q. 5. If there is no objection, and the question is asked simply
142 as explanatory and to give character to whatever testimony you might give here, I will ask you to state how your business—taken, say, over a period of years from 1859—will compare, in its extent and as to the value of products handled, with that of the largest business carried on by other merchants in the same line of industry, during the same time, in this city.

A. If I understand the question, you don't ask me as to the amount of business we have done in these several years.

Q. 6. That is correct. I simply wish you to state how you rank yourself or your house with your competitors in this city or country in the same line of business, especially as to dairy products.

(Objected to as immaterial.)

A. I don't believe we have for the past eight years at any time been below third or fourth in New York. I think within eight or ten years we have been first, but not all the time.

Q. 7. Are you familiar with the article, now manufactured and sold in this market and as a foreign export, called oleomargarine; and, if so, please state when and where you first became familiar with that product.

(Objected to as immaterial unless counsel shall further and more definitely define the term "oleomargarine," and the same objection is made to all questions in this disposition making use of the term "oleomargarine.")

A. I am somewhat familiar with an article sold in this market as oleomargarine, and think I first became acquainted with its use in the year 1877.

Q. 8. At the time you first became familiar with this product of oleomargarine, please state how it was then considered by the trade, especially that portion of the trade familiar with dairy products and

handling the same, as to its being a new or an old product or discovery.

(Objected to as being immaterial, irrelevant, and incompetent.)

A. I think it was considered at that time as being antagonistic to the dairy trade, and also a new discovery.

Q. 9. Do you now handle or sell oleomargarine as a part of your business in connection with dairy products; and, if so, for how long a time have you so handled it?

143 A. We do handle oleomargarine, and have handled it since the winter of '80 and '81.

Q. 10. Will you please state, Mr. Windsor, why you delayed handling this product of oleomargarine until as late a time as '80 or '81, and you must state also in that connection the position of the associations with which you were connected, as before stated, as to the product of oleomargarine at that time, and the position of those associations as to that product at the present time.

(Same objection.)

A. It was, because I was so strongly and largely identified with the dairy interests of the country that I did not believe it policy, as a matter of business, for me to handle or recognize oleomargarine during those years. I think the positions of the associations were the same at that time as my own position or the position of the firm as stated above, N. D. Hare & Co.

Q. 11. Why do you now handle and recognize oleomargarine?

(Same objection.)

A. Well, from the fact that we believed, as a firm, that it was bound to become an article of commerce despite all opposition, and that in order to hold our trade in dairy products we must also sell oleomargarine.

Q. 12. In what manner or shape does the mercantile exchange, of which you are now president, countenance and recognize oleomargarine?

(Same objection.)

A. I believe the majority are willing to countenance its sale as oleomargarine.

Q. 13. Please state whether or not it has any place on the call among the recognized products on that exchange.

A. It has the same place on the call as dairy products or any other products recognized on the exchange.

Q. 14. I will ask you, Mr. Windsor, as a representative of that organized opposition which opposed the recognition of oleomargarine in any shape as a food product, in the beginning of its struggles for a place among such food products, what steps or measures you took personally or as a representative of such organized

144 opposition to oppose or crush out oleomargarine upon its first demand for recognition as an article of food product in this country.

(Same objection.)

A. I advocated, as an individual in that organization, the passage of a law by our State Legislature requiring the branding of this article as oleomargarine before it could be sold by any party dealing in it, so that all might know who handled it or used it what they were purchasing or using, but never the crushing of it out of existence.

Q. 15. Yes; but the opponents of oleomargarine, who then desired it so branded, believed that if it was so branded no citizens would buy it or eat it?

(Same objection, and also because leading.)

A. I hardly think I could state that our organizations or the majority of them thought that no person would buy it or eat it if it was so branded, but we did believe it would interfere largely, if it was so branded and so known, with its sale.

Q. 16. Will you please state what effect this product of oleomargarine, with its large manufacture and sale in this country, has had upon either the production, consumption, or quality of natural butter?

(Objected to because calling for a mere expression of opinion by the witness.)

A. I don't think it has lessened the production of butter, but I believe it has tended largely toward improving the quality of the same, from the fact that it has largely taken the place of the medium and lower grades of butter and forced the manufacturers of the lower grades to make a finer grade of butter in order to find a profitable market for their products.

Q. 17. Are you familiar with the present existing creamery system for the production of butter in this country? And, if so, please state what influence or effect the introduction of oleomargarine had, either upon the organization of such system or as to its present extensive proportions.

(Same objection.)

A. I believe that I am somewhat familiar. I think the in-
145 troduction of oleomargarine has greatly increased the introduction of the creamery system and the production of creamery butter in this country.

Q. 18. At what price do you sell oleomargarine, and at what price did the dairy butter formerly sell at, whose place such oleomargarine has now taken?

(Objected to because based upon an assumption.)

A. If you will confine it to the present year, I would answer that we sell oleomargarine at from 15 to 16 cents, and dairy butter, that has taken the place of oleomargarine, to the consumer at from 28 to 32 cents per pound.

Q. 19. In your opinion, is or is not oleomargarine a healthful,

nutritious, and palatable article of human food? And if it has in any manner been a benefit to the poor or laboring classes of this country, please state in what manner it has so benefited them.

(The last portion of the above question objected to because calling for a mere expression of opinion on the part of the witness.)

A. I have no knowledge that it ever has been an injurious article of food. I believe it has been of benefit to the laboring classes, because it has tended to keep the price of natural butter lower.

Q. 20. Is the manufacture and sale of oleomargarine on the increase or decrease? And please state whether it is now a staple article of manufacture in this country.

A. The manufacture is on the increase. It is now a staple article of manufacture.

Q. 21. From what is oleomargarine produced?

A. I suppose, beef fat.

Q. 22. To whom do you sell your oleomargarine?

A. To the retail grocers entirely.

Cross-examination by T. S. E. DIXON:

C. Q. 1. Where you have used the term "oleomargarine" have you meant what is known to the trade as oleomargarine oil, or what is known to the trade as the oleomargarine butter, as distinct from the oil?

A. I have referred to the article known as the oleomargarine butter to the trade.

C. Q. 2. You have spoken of the creamery system and its
146 wide and general introduction; does not the farmer derive a greater profit from his milk when it is made into butter under the creamery system than when it is made into the ordinary milled or ladled dairy butter?

A. At the present time, it does.

C. Q. 3. Does not this additional profit tend to produce an increase in the amount of the better qualities of butter, and to diminish the production of the inferior grades?

A. Naturally would.

C. Q. 4. You and your firm derive, of course, a profit from your dealings in what is termed oleomargarine butter?

A. We intend to, and do.

C. Q. 5. Please tell us what the Society for the Prevention of Adulteration of Butter in New York, of which you are president, is doing at the present time toward suppressing adulterations in butter.

A. Nothing.

C. Q. 6. Its present existence, then, is practically a farce, is it not?

A. I will not admit that it is a farce.

C. Q. 7. Your financial interests at the present time are promoted by the sale of oleomargarine, are they not?

A. I think they are.

C. Q. 8. You have spoken of your advocacy, as an individual, of the principle that all who were handling or using oleomargarine

butter should know just what it was; do you not now believe and maintain that no purchaser should be imposed upon with the sale of this substance as butter, but that he should be informed, either by the branding of the article or in some other manner, just what it is, not only in New York, but in every State in the country?

A. I believe he should.

Redirect by C. K. OFFIELD:

R. D. Q. 1. Defendant's counsel has asked you a number of questions about oleomargarine butter. Now, is it not a fact that this new product, concerning which you have given your testimony and which you now buy and sell, is called and designated by the
147 mercantile exchange and recognized by that exchange and upon its committees simply and solely by the name oleomargarine, and that you sell it and purchase it simply and solely under the name oleomargarine, and that by a special enactment and law of this State this product is to be stamped, identified, and branded by the name oleomargarine, and that the word butter has no connection with it in any other relations and conditions above indicated?

(Objected to because obviously intended to instruct the witness as to his answer.)

A. On our exchange we don't recognize anything in artificial butter except oleomargarine, and all artificial or imitations of butter must be bought and sold as oleomargarine and branded as such, to be recognized under the rules of our exchange, which we believe are made to comply with the State law to regulate the sale of artificial butter.

Recross-examination:

C. Q. 1. Are there not large quantities of artificial butter sold in New York, especially quite recently, under the name or term of butterine or suine, into the compositions of which it is understood that lard or deodorized lard oil largely enters?

A. I think there are goods being sold that it is claimed contain lard, but as to the quantities or whether it is a fact, I have no personal knowledge.

WASHINGTON WINSOR.

Subscribed and sworn to before me November 22, 1883.

V. S. LILIE,
Notary Public, Kings County.

Certificate filed in New York county.

Adjourned to November 22, at 11 a. m.

148 NOVEMBER 22—11 a. m.

Met pursuant to adjournment.

Present: Same as before and B. F. Thurston, Esq.

And thereupon complainants call as witness in their behalf HENRY MORTON, Esq., who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by complainants' counsel:

Q. 1. Please state your name, age, residence, and occupation?

A. My name is Henry Morton; I am forty-seven years of age, and am president of the Stevens Institute of Technology, of Hoboken, where I reside.

Q. 2. Please state somewhat in detail what opportunities you have had for the study of chemistry and physics in connection with the application of the sciences to the industrial arts, and please state in this connection generally what opportunities you have had in the application of use of any knowledge you may have in this direction to either the construction of or in reference to letters patent, either in litigation or otherwise.

A. For nearly twenty-five years I have devoted a large part of my time to study and investigation of subjects connected with chemistry and physics and to giving instruction in these subjects at the University of Pennsylvania, where I formerly occupied the chair of chemistry, in the Stevens Institute, and elsewhere. During all this time I have made myself from time to time familiar, by direct inspection, with the processes going on in many factories where chemical manufactures or operations are now carried on, and have also been frequently called upon to examine new chemical processes, and have carried them on both in my own laboratory and elsewhere. For the last twelve years I have been almost constantly engaged in examining patents and in experimenting with processes described in such patents and in giving testimony in reference to the same in suits brought in the United States courts.

149 Q. 3. Please state fully what experience you have had in the investigation of the properties and constituents of fatty substances with a view to the utilization of such substances in the arts.

A. When the discovery of Mége was first generally known in this country my attention was called to the question of tests by which it might be possible to distinguish natural from artificial butter, and in the conducting of this search I made many examinations and analyses of butter and other fats, both animal and vegetable. Soon after that I conducted a number of experiments, both in my own laboratory and at the establishment of Messrs. Rafferty & Williams, in New York, on the rendering of fat at various temperatures. I also conducted other experiments in the same connection at the establishment of Messrs. Tobey & Booth, also in New York; also other experiments at the works of the United States Dairy Company, who was succeeded by the Commercial Manufacturing Company, Consolidated. In connection with a suit on certain soap patents of Messrs. Eames & Seely I also conducted a series of experiments of

various fats in relation to manufacturing into soap and in connection with the proceedings on accounting in the case of Tillman *v.* Proctor & Gamble. I recently made a large number of experiments on the treatment of fats, both at my own laboratory and at the establishment of Messrs. Proctor & Gamble, at Cincinnati, and I have also made several hundred analyses of various fatty mixtures.

Q. 4. I view of your special experience just recited, taken into connection with your general knowledge of the science, would it be correct to state that you have made full and specific investigations of the character and constituents of fatty substances with reference to ascertaining the uses in the arts in which such substances can be employed?

(Objected to as leading.)

A. I think the statement in your question is a little too general to be correct, but I should say that I have made full and specific investigation in reference to the fatty substances used in the arts in connection with the subjects I have mentioned, but there are, of course, other fatty substances, some of which are used in the arts, on which I have not made any specific investigation.

Q. 5. When and from what source did you first hear
150 of the alleged invention or discovery of Hippolyte Mége relating to the utilization of some of the constituents of animal fat as a substitute for the butter product of cream with milk?

(Objected to as immaterial.)

A. The first publication on this subject which I saw was that contained in the Monitur Scientifique Quesneville, shortly after the publication of the same, and about the same time the matter was mentioned to me by Professor George F. Barker, now of Philadelphia. I do not now remember the date, but knew it was about the time of publication of the report on the Mége process in the journal named, to which I was then a subscriber.

Q. 6. Was this publication or the substance of it copied at that time in any American publication; and, if so, can you in any manner fix or approximate the date when the Mége invention or discovery came to your knowledge?

(Objected to as immaterial, irrelevant, and incompetent.)

A. This article was translated and published in the American Chemist at about the same time, though I think I saw the French journal first. I subscribed to both. I have them both in my own library at the present moment, but cannot recall with certainty the date, except that I think it was about 1872.

Q. 7. At the time this alleged invention or discovery of Mége first came to your knowledge please state, then, how it was considered by yourself and associates in scientific matters as to its being a new step in science.

(Same objection.)

A. It was considered by myself and others of my scientific friends rather as a new application of scientific principles to industrial arts than as a new step in science. I should, in fact, be disposed to call it a new step in the arts or in the application of science rather than a new step in science.

Q. 8. Have you read and do you understand the reissue letters patent No. 10137, dated June 13, 1882, granted Hippolyte Mége for an improvement in treating animal fats, said reissue being founded upon original letters patent to the said Mége, 146,012, dated December 30, 1873, said letters patent being introduced in evidence
151 in this case and marked "Complainants' Exhibit Mége Patent?"

A. I have read and believe I understand the patent referred to.

Q. 9. Please state fully what improvement having in view the utilization of fatty substances for food purposes is described in said letters patent and recited in the two claims thereof.

A. Improvement recited and claimed, as I understand it, is an improvement in a product and in the process by which said product is obtained. This improvement consists substantially, as far as the product is concerned, in the production from animal fats of a material having substantially the composition and qualities of ordinary butter, such product being obtained by a process consisting substantially of the two following steps:

First. The separation from fresh or undecomposed animal fat of its oily matter or greasy substance by combined application of mechanical or equivalent treatment and heat in such a way that the greasy substance is completely separated from the membranous material of the fat without acquiring any taste of fat, but so that, on the contrary, it shall have the taste of molten butter.

Second. The greasy substance prepared as above is then to be allowed to stand at such a temperature and for such a time that the greater part of the stearine, which is one of the constituents of the animal fat, shall crystallize. When this has happened this crystallized stearine is to be removed by a centrifugal or equivalent means, and the remaining mixture of fatty substances then constitutes the margarine, which, as the patent states, may replace butter in the kitchen. Briefly, the process of this patent consists, first, in the preparation of a pure greasy substance, free from membranous matter and from any fatty taste; and, second, in the removal from this greasy substance of a portion of its stearine, thus bringing it into substantial identity in composition as to its main ingredients and inconsistency as to its degree of hardness or softness with natural butter. The patent also recites means by which the margarine above described may be transformed into a more perfect imitation of natural butter, and this process consists substantially in
152 mingling the margarine with milk or some equivalent aqueous fluid in such a way as to introduce into it certain flavoring and coloring matters and to make it into a permanent emulsion. This part of the process, however, I do not understand to be essential matter, since it is distinctly stated in the first claim that the material

there claimed is either with or without the addition of substances to change the flavor, consistency, or color, as set forth.

Q. 10. What are the principal constituents of the animal fat of beeves and how contained in the living animal, and what changes occur in their physical condition after the death of the animal?

A. The principal constituents of the fat of beeves are three substances, known, respectively, as stearine, palmatin, and olein. Formerly it was supposed that there existed a substance named margarine, but later investigation has shown that the body so called was only a mixture of palmatin with some stearine, yet, as the word is constantly used in the older writers and its use involves no error practically important in the present connection and will save much unnecessary definition, I will, as a rule, refer to the three main constituents of fat as stearine, margarine, and olein, margarine being in this sense practically equivalent to palmatin. Besides these there are insignificant traces of other matter in what may be called the structureless oily matter of fats. This structureless oily matter in the living animal exists in a fluid state, enclosed in numberless minute envelopes of albuminous material, these little globules or sacks being grouped together in bunches, which are enclosed in more substantial tissues, and these inclosed bunches are more or less inclosed or separated by yet firmer membranes, through and among which pass the blood vessels by which the circulating fluid travels to and from and nourishes all parts of this as it does other portions of the animal structure. On the death of the animal, as its natural heat is lost, the structureless oily matter solidifies, and this, I believe, is the only physical change of importance which takes place, except, of course, the decomposing changes which ensue in the membranous tissues in the course of time.

Adjourned to November 23, at 11 a. m.

153 NOVEMBER 23—11 a. m.

Met pursuant to adjournment.

Present: Same as before.

Q. 11. Prior to the discovery of Mége what were the methods of rendering fatty substances for the various uses in the arts and for domestic purposes which are known to you as a man of science from the descriptions contained in the literature relating to the subject or of which otherwise you have any knowledge?

A. The methods in use may be divided into two classes, the melting in open kettles and the melting in closed vessels. The melting in open vessels was conducted by placing the fat, which had been cut up or divided into small pieces, in a kettle either heated directly by fire or indirectly by steam jacket or in some cases by water bath. In this kettle the fat was usually heated to a temperature consideraby above that of boiling water, whereby the moisture was driven out from the membranous matter of the fat, causing the same to shrink and become brittle, thus allowing the oily or greasy matter of the fat to escape from the membranous envelopes, while these membranous envelopes and connecting tissues, becoming dense,

settled down and were separated from the oily matter. These dried membranous parts were called cracklings. In some cases—*i. e.*, when a water bath was used—the temperature of the fat was not raised above the boiling point of water, but only brought pretty near to it, by which means the membranous parts of the fat were not — thoroughly dried as where the temperature was higher, but only changed in a way which I can best express by saying that they were cooked. This cooking, however, diminished their tenacity, caused a considerable shrinkage, and thus promoted the escape of the oily matter from the membranous envelopes. It was, however, necessary, under these conditions, that the fat should be chopped up quite fine or ground in a mortar to secure anything like a complete separation of the oily matter from the membrane. The other general method was to place the fat, often in large masses, in a strong vessel, capable of being closed tight, with a quan-
154 tity of water, and heating the same either by direct fire, a steam jacket, a steam coil, or the injection of live steam, running the pressure to various amounts, often as high as about 100 pounds to the square inch, which would correspond to the temperature of about 325° Fahrenheit. Acids were sometimes added to the water in this treatment, and, as a further modification of such process, the mixed fat, water, and acid was sometimes treated in an open vessel, the temperature being then only raised to the boiling point of water. There have been numberless small modifications of the above general types of process, but none of them involve any serious departure from the general methods of working I have indicated. In all cases the fat, with or without the addition of water or acid or the like, was heated to a temperature either near to or very much above that of boiling water.

Q. 12. What effect has the employment of comparatively low and comparatively high temperatures in the rendering of animal fats upon the character and qualities of the contents of the membranous cells containing a homogeneous mixture of the constituents of fat?

A. If the temperature at which the rendering is effected is very little above that at which the contents of the membranous cells becomes fluid, then the oily or greasy matter will be entirely free from any taste or smell other than that which belongs to said oily matter itself and which may be best described by saying that it is like that of melted butter. If the temperature is higher than this and sufficiently high to cause that change in the membranous part of the fat which I have described as cooking, then the oily or greasy substance will acquire a taste and smell which is often described as tallowy, but I think can be more accurately defined by saying it is the smell of cooked fat or a fatty smell such as we notice in the fatty parts of cooked meats. This smell and taste, when we encounter it in cooked meat, is not disagreeable, but is so if met with in butter, and then suggests the idea of tallow, though, as I think, the true tallowy flavor is much more pronounced and is only fully developed in a fatty substance which has become to some degree rancid. When the temperature employed is above that of boiling water the

taste and smell of the oily product is still more pronounced
155 and more closely resembles that of tallow, while if the temperature is high enough to cause scorching of the fat there then will be developed in the oily product a taste and smell of a very acrid character, due to the presence of acroleine and other empyreumatic products. In order that rendering should be accomplished so as to produce a practically tasteless and inodorless oily matter, such as I have first alluded to, not only must the temperature at which the rendering or separation of the oily matter from the membrane is accomplished be below that which will effect the cooking of the membrane, but the process of separation must be rapid, as otherwise the oily matter will acquire an offensive taste and odor, due to something like a fermentation or putrefaction of the membrane, and in order that this rapid separation may be effected the rupture of the membranous envelopes of the oily matter must be very thoroughly effected by mechanical or other equivalent means.

Q. 13. Please state somewhat more fully what is the importance, if any, in practicing or following the process described in Complainants' Exhibit Mége Patent of crushing, grinding, comminuting, or disintegrating the fatty substance preliminary to the process of resolving the crude fat into its constituents, or, expressed otherwise, to render it by the action of heat.

A. The membranous envelopes in which the oily matter of the fat is first enclosed are exceedingly minute, and though they are very delicate, yet unless they are broken or otherwise ruptured they will retain the oily matter, even after the same has been liquefied by heat, with considerable tenacity, unless the heat is carried high enough to cause that change and shrinkage in them which I have indicated by saying that they were cooked. In order, therefore, to effect the rapid liberation of the oily matter from these envelopes at a temperature below that which could thus change or cook them it is necessary that the envelopes should be broken or ruptured beforehand by mechanical or other equivalent means, and this, as I understand, is the reason why the grinding and comminuting to which you have referred is important.

156 Q. 14. Referring again to these membrane cell walls you have described and assuming that they are not broken, bruised, or weakened by mechanical or other equivalent means, will you please state what change is required in the degree of heat necessary to render or liberate the fatty globules beyond that that is sufficient if the cell walls are first broken, bruised, or greatly weakened? I do not ask for an exact degree of heat, but only approximately, in comparing the degree of heat necessary for the liberating of the fatty globules under the two conditions assumed.

A. Where the membranous envelope is uninjured a much higher degree of heat would be needed to effect the liberation of the oily matter and its separation from the membrane, because the degree of heat required must in that case be sufficient to so modify the membrane as to occasion its rupture and allow the escape of its contents, while in the case where the membrane is already ruptured,

bruised, or greatly weakened it is only necessary that the heat should render the oily contents perfectly fluid and occasion some slight change in the membrane by which the escape of the oily matter and the subsequent separation of the oil and membrane would be effected.

Q. 15. What would be the resulting consequences, if any, in the direction of deteriorating the value of the product for food purposes in case the sole reliance for breaking the cell walls is an increase of heat?

A. The deteriorating would be the development of a fatty or tallowy taste which would prevent the use of the product as a substitute for butter by reason of the presence of this flavor, which, in connection with butter, is highly objectionable.

Q. 16. What office or function, chemically considered, is performed by the gastric juice when employed as an agent to assist in rendering fatty substances under the application of heat?

A. In a chemical sense, the gastric juice performs the function of a solvent and, perhaps also, of a ferment upon the membranous tissue, the result of said action being to weaken, disintegrate, and dissolve such tissue, thereby acting as an aid to or substitute for the mechanical process of grinding or comminuting.

157 Q. 17. Please state what, chemically considered, are the identities and differences between the improved material described in the Mége patent and produced by treating animal fats, so as to remove the tissues and other portions therein named, with or without the addition of substances to change the flavor, consistency, or color as therein set forth, and the constituents of dairy butter made by the ordinary processes from cream of milk.

A. There is, of course, a difference in the improved product described and claimed in the Mége patent, according as it is made with or without the addition of materials affecting its color, consistency, and flavor. I will therefore refer to each of these conditions separately. When the improved product of Mége, without these additions referred to, is compared with ordinary dairy butter we find it to be substantially identical therewith as regards its main constituents and its general consistency and character. Both products then consist substantially of mixtures in nearly the same proportions in either case of stearine, margarine, and oleine, and both are unctuous solids varying in consistency, being quite solid near the melting point of ice, quite fluid at a temperature of about 90°, and more or less soft and plastic at intermediate temperatures. The Mége product, however, differs from dairy butter, in the first place, as to its composition by reason of the presence in the dairy butter of several substances not found in the Mége product. Thus, the dairy butter contains about five per cent. to six per cent. of the peculiar fat known as butyrine; it also contains a smaller amount of casein, some trace of albumen; also extremely minute quantities — caprilin, caproilin, and caprylin. None of these substances would be present in the Mège product as above referred to, which would therefore lack peculiar flavor due to the presence of these products. The amount of water and of salt would also, as a rule, be greater

in dairy butter than in the Mége product. There would also be a difference in consistency, inasmuch as the dairy butter would not constitute a homogeneous mass of fatty substance, but would be a solid emulsion of such fatty substance, in which the same existed as minute spheroids or particles of the said fatty substance, separated from each other by an aqueous fluid consisting of water, holding in solution salt and traces of albumen and casein.

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When the Mége product has been converted into a more perfect butter, as he calls it, by the addition of certain substances, as indicated by him, it will then contain all or nearly all the materials found in dairy butter, though not in exactly the same proportions, all these distinctive matters being, as a rule, present in smaller proportions in the Mége product than in the dairy butter. As regards the water and salt, the relative proportions may vary either way in different samples, depending upon the amount of salt added and the amount of working to which the butter of Mége product has been subjected. As regards consistency of the more perfect butter of the Mége patent and ordinary dairy butter, there will be a substantial identity, both being solid emulsions of fatty matter with an aqueous fluid.

Q. 18. In what particulars, if any, are the two products, meaning the improved material of Mége and dairy butter, distinguishable from each other as articles of human food, and to which would you give the preference as to healthfulness, nutritiousness, and palatableness?

A. As articles of food the Mége product and ordinary dairy butter are only distinguishable by characteristics which are variations of degree. Thus, the Mége product in its simplest form would have less flavor and a less agreeable consistency than good dairy butter, while, on the other hand, its freedom from disagreeable flavor would render it superior to a low or poor grade of dairy butter. When the flavoring materials were added the Mége product would then be extremely difficult to distinguish from the best dairy butter, but as compared with a very fine and highly flavored dairy butter would be lacking in flavor. As regards wholesomeness, I do not think there would be any difference between the Mége product in either of its conditions and ordinary good dairy butter, though the Mége product would be better in this respect than a strong or rancid quality of dairy butter. The same remark applies to the nutritiousness of the materials compared, while as regards palatableness the Mége product would, I think, hold an intermediate place between the highest and the lower grades of dairy butter, being better than the low grades and not quite equal to the highest in this respect.

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Q. 19. In your opinion and to the extent of your knowledge was the product obtained by the process described by the Mége patent and referred to in the first claim thereof a body new in the art of rendering and treating animal fats at the date of the original Mége patent?

(Objected to as leading and as immaterial, irrelevant, and incom-

petent; and especially as there is no allegation in the answer that witness had any knowledge of either process or product prior to the date of the Mége patent.)

A. To the best of my knowledge this was an entirely new product, there being no trace in the literature of the subject, which I have very extensively examined, of any process which could have produced such a product or any description of any product corresponding in properties with that of the Mége patent.

(Complainants' counsel here offers in evidence a type-writer copy of certain depositions taken in the above cause, being the depositions of John Connelly, Horace Manley, and John Leo, and requests the notary to identify this copy with this record and mark the same "Complainants' Exhibit Copy Infringement Testimony," explaining in this connection that this copy is thus offered for the purpose of interrogating the witness concerning certain statements therein made in relation to the process used and product produced by the defendant in its production and treatment of animal fats.)

Adjourned to November 24, 1883, 2 p. m.

Met pursuant to adjournment.
Present: Same as before.

Q. 20. Have you read the testimony just introduced in evidence and marked "Complainants' Exhibit Copy Infringement Testimony," which details and sets forth the process used and product produced by the defendants in their treatment and production
160 of animal fats, and the summary thereof? And, if so, please state whether or not the process set forth in such testimony and summary and the product obtained thereby is substantially alike and as is set forth and described in Complainants' Exhibit Mége Patent, and shown in the two claims thereof, and give your reasons for any opinion you may express.

A. I have read the documents to which you refer, and am of opinion that the process and product therein described is the process and product of the Mége patent No. 10137, of June 13, 1882. My reason for this opinion is that I find in the document referred to the description of the preparation from animal fat of a greasy product fit for use as a substitute for butter by a process which consists, first, in the rendering of fresh or preserved animal fat at a temperature so low as to secure in it an entire absence of fatty or tallowy taste; and, second, in the separation from the above product of a large part of the stearine therein contained, so that the resulting oily matter shall have substantially the composition and consistency of natural butter and be capable of being converted into a more perfect butter or into a product almost identical with natural butter by the addition of substances affecting its flavor, consistency, and color. Such a product as above described is, in my opinion, the product described and claimed in the Mége patent, and the process I have above indicated is, in my opinion, the process set forth and claimed in the said patent.

Q. 21. Please answer the above interrogatory somewhat more fully in comparing the means or the steps shown in the Mége patent with that described in the Complainants'. Exhibit Copy Infringement Testimony and Summary.

A. With reference to the means employed it is my opinion that these as described in the documents referred to and in the Mége specification are substantially identical. Thus, in the Mége specification it is directed to use water containing sea salt and sulphate of soda as a preservation of the fat previous to its disintegration. In the process of defendants this preservation is accomplished by the use of ice. In the Mége patent the disintegration of the fat is accomplished by grinding under millstones; in defendants' process by the employment of what is called a hasher. In the

161 Mége patent the rendering or separation of the greasy substance from the tissues is accomplished by heating in a vessel with a hot-water jacket to a temperature of about 103° Fahrenheit, but sufficient to effect the complete separation of the greasy matter from the membranes, and to aid the separation there is added to the pulverized fat a fluid described as artificial gastric juice. In the process of defendants the operation of rendering is performed in a vessel surrounded by hot water, jacketed at a temperature at or about 120°, without the addition of the artificial gastric juice; and I regard this slight increase of temperature as the obvious equivalent for the gastric juice which is omitted, and in both cases the temperature is substantially one calculated to effect the result pointed out in the patent of securing the separation of the greasy substance from the tissues without imparting to the former any taste of fat. Both in the patent and in the process of defendants salt is added during the rendering. Again, the patent directs the slow cooling of the oily material and its maintenance at a temperature of from 86° to 98°, until the larger part of its stearine has crystallized, and the subsequent separation of this crystallized stearine from the oily matter constituting the butter product, by the use of a centrifugal and press. In the process of defendants the greasy matter is allowed to cool to substantially the same temperature, and there maintained until the stearine has crystallized, after which the oily matter is separated by the action of a press without the use of a centrifugal. This, however, I consider to be a case of well-known mechanical equivalents, since both press and centrifugal had been employed for the separation of fatty matters long prior to the date of the Mége patent.

Q. 22. In your opinion and to the extent of your knowledge is there any other process by which the product described and claimed in the Mége patent can be produced except by the employment, substantially, of the process therein set forth?

(Same objection as to question No. 19.)

A. There is no process by which the Mége product can be produced except that of the Mége patent or its substantial equivalents.

Adjourned to Monday, November 26, 1883, 11 a. m.

162 Met pursuant to adjournment.
Present: Same as before.

The same being Evacuation Day, an adjournment was had to Tuesday, November 27, 1883, 2 p. m.

Met pursuant to adjournment.
Present: Same as before.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. Then the two are inseparable, are they not?

A. I so understand them to be.

C. Q. 2. And the Mége product is peculiarly and exclusively the creation of the patented process and all that it embraces?

A. It is a product which is exclusively produced by the Mége process or its substantial equivalents.

C. Q. 3. Please explain more fully why you do not regard Mége work as a new step in science.

A. Because I regard a new step in science as being the discovery of some important law of nature or large class of new facts by which the existing state of science at the time is sensibly modified; thus the discovery by Faraday of the laws and facts of magneto-electric induction was a new step in science. The mere application of known laws and facts to the production of new results, while very important to the progress of the world, is not, I think, properly defined as a new step in science; thus the application of magneto-electric induction involved in the invention of Gramme, while it has profoundly modified the commercial uses of electricity, I would not call a new step in science, but rather an important step in the application of scientific principles to the practical arts; thus, in reference to the Mége invention, this does not, as I understand, involve the discovery of any new scientific law or important class of scientific facts, but simply amounts to the discovery that by treating fresh fats in a certain way their greasy substance could be separated from its accompanying tissues without acquiring any flavor other than such as would be found in melted butter and in the applica-
163 tion of the known properties of mixed fats when slowly cooled to the separation from the above product of a certain portion of its stearine, thus leaving a product which, in its composition as regards its main constituents and its consistency, should be substantially like ordinary butter. This I consider to be like the invention of Gramme, an important application of science to the arts, but not a new step in science.

C. Q. 4. Then Mége did not discover the chemical composition of butter or the chemical composition of fat or the identities or differences between these two articles?

A. He did not.

C. Q. 5. Then his work, whatever it was, would be properly characterized by the term invention rather than discovery?

A. There was something of discovery as well as invention, because in the first place it was a discovery to find out that such a

product as I have described could be produced by any means, and it was invention to arrange adequate means for producing it.

C. Q. 6. Does he not directly state in his specification that his invention or discovery, whichever it may be called, was "the result of physiological investigations?"

A. He does.

C. Q. 7. His work being thus based on physiological investigations, would not the scientific man, in endeavoring to measure and properly estimate the true character of any discovery he may have made, turn at first his scrutiny towards that department and that aspect of his work?

A. I think that would depend very much upon what the discovery of Mége, as set forth in his specification, actually appeared to be. If it there appeared that the process described and set forth was substantially a physiological one, the scientific student would consider it primarily in its physiological relations; but if the process appeared to be substantially a mechanical one and consisted in obtaining by mechanical means the results equivalent to those physiologically in the organs of the cow, I think the scientific student would direct his first attention to these mechanical means and would not trouble himself about the physiological relations, except so far as they were involved in a comparison of the results of the pro-
164 cess with the natural butter which it was intended to resemble.

C. Q. 8. Looking at it from the standpoint you have assumed on the direct examination, do you see any necessary element in the process set forth in the patent which is based upon any physiological fact or any physiological relations?

A. As I understand it, the whole process is based on physiological facts and relations in the sense that it is a process designed to produce by what we may call artificial or mechanical means results substantially identical to those produced by physiological actions in the production and manufacture of ordinary butter.

C. Q. 9. Please point out, then, the necessary elements in the process set forth in the patent which are based upon physiological facts, and state also all the physiological facts upon which the elements are based.

A. It is stated by the inventor as a physiological fact that a cow under certain conditions re-absorbs her own fat in order to convert the same into butter. This, of course, implies that in the process of this re-absorption a change is effected in the relative proportions of stearine, so that the butter fat as secreted by the cow has a diminished proportion of that ingredient. It is also assumed that to this re-adjusted fat as above the cow adds in the process of its development certain highly flavored fats, such as butyrine, not present in the absorbed fat. Nothing is said in this patent as to any supposed or known methods or physiological processes by which these results are effected in the body of the animal, but parallel mechanical treatments are described by which equivalent effects or products may be obtained. Thus, a method is described of first liberating the greasy substance of the fat and then removing from this the

excess of stearine. Manifestly there is nothing physiological about this process nor any sort of analogy between it and what goes on in the body of the cow, who certainly does not grind up her own fat, digest and remove its enclosing tissues, or crystallize out the stearine and separate the same by centrifugal or press. Furthermore, when, for the production of a more perfect butter, various materials
165 are to be added these are simply borrowed from the cow and mechanically mixed with the before-described product with no further relation to any physiological process than that which I have already mentioned as being involved in the similarity of results.

C. Q. 10. If I understand your answer rightly you have pointed out certain physiological processes taking place in the animal economy in the formation of milk from which butter is made, and then in the latter part of your answer, turning to the process, you have pointed out certain steps and shown that they were mechanical and not physiological in their nature and analogies. Enquiring a little further, at what temperature does the formation of this milk take place in a cow?

A. In the first place, I do not think that I have pointed out any physiological processes taking place in the formation of milk, but have simply said that the butter fat of milk was formed in the body of the cow by some physiological process or other, about which I pretend to know nothing. The temperature at which such process occurs must, of course, be somewhere in the neighborhood of the average animal heat of a cow. I do not recall precisely what that is, but, to the best of my recollection, I believe that I have seen it stated as about 104° Fahrenheit.

C. Q. 11. Did you not state in your preceding answer, among other physiological facts, that the cow adds in the process of its development certain highly flavored fats, such as butyrine?

A. I stated what you have quoted, which, however, I presume you recognize as a statement of fact and not the statement of a process.

C. Q. 12. It is a statement of fact as to what occurs during the process and as part of the process, is it not?

A. No; it is simply the statement of a result entirely without reference to the process.

C. Q. 13. Regarding the animal temperature of the cow or ox, I will read you the following from Miller's Elements of Physiology, vol. I, page 175, and Dunglisson's Physiology, vol. VII, page 188. Fiedmann and Rudolphi have collected all the facts known relative to the temperatures of different animals. The following is derived from the most copious table of Fiedmann: "The
166 ox has a temperature from 99° to 104° Fahrenheit. The sheep has a temperature from 100.40° to 104° Fahrenheit." The animal heat of the ox is 100° to 103° Fahrenheit. The animal heat of the sheep is 100° to 103° Fahrenheit. Are you acquainted with these authorities and have you any reason to doubt their correctness?

A. I recognize both these authorities as of good standing, and have no reason to doubt the accuracy of these statements.

C. Q. 14. Have we not, then, in the process set forth in the patent in the step thereof entitled by Mége "concentrated digestion," a striking analogy to physiological action in the direction given by Mége to conduct the artificial digestion "so that the heat does not exceed 103° Fahrenheit?"

A. We have much more, since we have, in fact, as nearly as possible a reproduction of the actual conditions for the digestion or solution of animal tissue present in the stomach of an animal which feeds on such food.

C. Q. 15. Please point out those actual conditions.

A. The mixture of the animal tissue in question with active pepsin and free acid and an appropriate temperature. The membrane is also in a state of minute division, which of course hastens the digestive action.

C. Q. 16. What physiological reason exists why he directs that this artificial digestion should be conducted so that the heat does not exceed 103° Fahrenheit? I do not refer to the result produced, but to the nature of the active agents employed, if you know of any reason.

A. A reason which occurs to me as a possible one is that the activity of the pepsin in breaking up the tissues is impaired at higher temperatures. It would, therefore, be desirable to restrain the temperature to this point until this process was completed, and only raise it at the end if this were necessary to secure the complete separation of the oily matter from the tissues.

C. Q. 17. What was known about artificial digestion and the necessary conditions to be observed to insure success in conducting the process at the time Mége entered upon his investigations?

A. Where the object was simply the breaking up of
167 such substances as are indicated by the general term proteids, such as albumen, the flesh and tissues of animals, etc., the essential conditions were well known and were — the presence of fresh or active pepsin and of dilute hydrochlorate acid—that is, a mixture of water with about one-fifth of one per cent. of hydrochlorate acid at a temperature of from 95° to 104° Fahrenheit. It is a matter of course that the more finely the material acted upon is comminuted the more rapid would be the action.

C. Q. 18. Professor, what authority were you consulting while giving your last answer?

A. A text book of physiology by Dr. M. Foster, London, 1878.

C. Q. 19. Had not experiments in the solution or artificial digestion of food outside of the stomach with the action of gastric juice then been made and accounts of them widely published prior to 1869?

A. They had.

C. Q. 20. I will read you the following passages from the book entitled "Elements of Physiology," by Dr. Miller, professor of anatomy and physiology in the University — Berlin, etc., published by Taylor and Walton, London, vol. 1, pages 538, 540, and 560:

"Dr. Beaumont's experiments on artificial digestion are of extraordinary interest. They demonstrate most satisfactorily that the stomach secretes a fluid which has the power of dissolving articles of food even out of the animal body; as an example we may instance the second experiment in the first series, Dr. Beaumont having, after the boy St. Martin had fasted seventeen hours, obtained from his stomach by the method which we have already mentioned one ounce of gastric juice, put into it a solid piece of recently boiled beef weighing three drams, and placed the vessel which contained them in a water bath heated to 100°. In forty minutes digestion had commenced on the surface of the meat. In fifty minutes the fluid was quite opaque and cloudy; the external texture began to separate and become loose. In sixty minutes chyme began to form. At 1 p. m. (two hours after the commencement of the experiment) the cellular tissue was destroyed, the muscular fibres loose, and floating about in fine small threads, very tender and soft. In six
168 hours they were nearly all digested, a few fibres only remaining. After the lapse of ten hours every part of the meat was completely digested. The gastric juice, which was at first transparent, was now about the color of whey and deposited a fine sediment. A similar piece of beef was at the time of the commencement of this experiment suspended in the stomach by means of a thread. At the expiration of the first hour it was changed in about the same degree as the meat digested artificially, but at the end of the second hour it was completely digested and gone. In other experiments Dr. Beaumont withdrew through the opening into the stomach some of the food which had been taken twenty minutes previously, and which was completely mixed with the gastric juice. He continued the digestion which had already commenced by means of artificial heat in a water bath. In a few hours the food thus treated was completely chymified; the artificial seemed to be but little slower than the natural digestion. (See experiments 25, 26, and 27, 2nd series.) Several of Dr. Beaumont's experiments—we may mention experiment 31, 2nd series, and experiments 28, 33, and 48, 3d series—demonstrate the influence of temperature and of the qualities of the gastric juice on digestion.

Experiment 31, of the second series, which, with many others, contrasts the action of water with that of the gastric juice on organic substances, may serve as an example. Having obtained from the stomach of St. Martin two ounces of gastric juice, he divided this quantity into equal portions and placed in each an equal quantity of masticated roast beef. One he placed in a water bath at the temperature of 99° Fahr., and left the other exposed to the open air at a temperature of 34° Fahr. A third similar portion of meat he kept in a phial with an ounce of cold water. An hour after the commencement of the experiment St. Martin had finished his breakfast, which consisted of the same meat, with biscuit, butter, and coffee. (Two hours after the meat had been put into the phials the portion in the warm gastric juice was as far advanced towards chymification as the food in the stomach.) The meat in the cold gastric juice was less acted on and that in the cold water was merely a little

macerated, and at the end of twenty-four hours the meat
169 which had been withdrawn from the stomach after digestion had commenced was, with the exception of a piece of meat which had not been masticated, converted into a thick, pulpy mass of a reddish brown color. The meat in the warm gastric juice was also digested, though less perfectly, while that in the cold gastric juice was scarcely more acted upon than the meat in the water, which was merely macerated. Dr. Beaumont now exposed these two phials containing the meat in cold gastric juice and meat in water to the heat of the water, both for twenty-four hours, and the gastric juice which when cold had no action on the meat now dissolved it, while the meat in the water underwent no change except that towards the end of the experiment putrefaction commenced."

"Fiedemann and Jemlin, who, on account of the accuracy with which their experiments were performed, and of their having brought both chemistry and anatomical physiology to their aid in conducting them, are looked upon as the highest authorities in every question connected with the subject of digestion, declared that the facts which they observed prove undoubtedly that the milkiness of the chyle is owing to its containing fatty matter suspended in a state of fine division. When the chyle coagulates a small portion of the fat becomes included in the clot, while the greater part remains suspended in the serum, to the surface of which it sometimes rises like a cream. Page 560."

Also the following passage from Regnantt's Elements of Chemistry, vol. II, page 744, paragraph 1693: "The gastric juice is secreted by the parieties of the stomach, varying in quality with that of the food to be digested, and its duty is to effect the solution of nitrogenous organic substances, for it appears to exert no action on fecula or fatty matters, since the latter leave the stomach without any remarkable change."

Also the following passages from the book entitled "Principles of Human Physiology," by Wm. B. Carpenter, M. D., F. R. S., F. G. S., Philadelphia, Blanchard and Lea, 1853, page 424, par. 448, page 427, par. 451, in the following passages:

"Our knowledge of the nature of the process of gastric diges-
170 tion has been greatly advanced by recent inquiries, and we are now in a condition to state with considerable precision what it is and what it is not the province of the gastric juice to effect. There can be no longer any doubt that the operation is one essentially of chemical solution, and that the vital attributes of the stomach are only exercised in the preparation of the solvent and in the performance of those movements which promote its action on the alimentary matters submitted to it. The first series of facts which clearly demonstrate this position were those which resulted from the very painstaking observations made by Dr. Beaumont in the case of St. Martin, already referred to."

Here follows the account of these experiments already quoted.

Again, on page 427, par. 451: "This action of the gastric solvent upon the azotized constituents of the food is dependent upon several conditions. One of the most important of these is temperature.

A heat of from 96° to 100° is required to keep up the solvent process, which is retarded according to the depression of the thermometer, below this standard, so that at the ordinary temperature of the atmosphere it is completely suspended, to be renewed, however, with an increment of heat; on the other hand, a trifling elevation of temperature above 100° occasions a decomposition in the gastric juice which entirely destroys its solvent powers."

Also in the same paragraph: "The importance of the previous state of minute division and incorporation with aqueous fluid in promoting the action of the gastric solvent has been already dwelt on."

Also "Kirk's Handbook of Physiology," Philadelphia, Henry C. Lee, publisher, an American reprint of the English edition of 1869, pages 224 and 320:

"When natural gastric juice cannot be obtained many of these experiments may be performed with an artificial digestive fluid, the action of which probably very closely resembles that of the fluid secreted by the stomach. It is made by macerating in water portions of fresh and recently dried mucous membrane of the stomach of a pig or other omniverous animal, or of the fourth stomach of the calf, and adding to the infusion a few drops of hydrochloric acid, about 171 $3\frac{3}{10}$ grains to half an ounce of the mixture. According to Schwamm portions of food placed in such fluid and maintained with it at a temperature of about 100° are in an hour or more, according to the toughness of the substance, softened and changed in just the same manner as they would be in the stomach. The nature of the action by which the mucous membrane of the stomach and its secretion work these changes in organic matter is exceedingly obscure. The action of the pepsin may be compared with that of the ferment, which at the same time that it undergoes change itself induces certain changes also in the organic matters with which it is in contact, or its mode of action may belong to that class of chemical processes termed catalytic, in which a substance excites by its mere presence and without itself undergoing change, as ordinary ferments do, some chemical action in the substances with which it is in contact; so, for example, spongy plantium or charcoal placed in a mixture, however voluminous, of oxygen and hydrogen makes them combine to form water, and diastase makes the starch in grains undergo transformation and sugar is produced.

"And that pepsin acts in some such manner appears probable from the very minute quantity capable of exerting the peculiar digestive action on a large quantity of food and apparently with little diminution in its active part.

"The process differs from ordinary fermentation in being unattended with the formation of carbonic acid, in not requiring the presence of oxygen, and in being unaccompanied by the production of new quantities of the active principle of ferment. It agrees with the processes of both fermentation and organic catalysis, in that whatever alters the composition of the pepsin, such as heat above 100°, strong alcohol or strong acids destroys the digestive power of the fluid."

Also "of the oleaginous principles, as to their changes in the stomach, no more can be said than that they appear to be reduced to minute particles and passed into the intestines, mingled with the other constituents of the chyme. In the case of the solid fats this effect is probably produced by the solvent action of the gastric juice on the areolar tissue, albuminous cell walls, etc., which enter
172 into their composition, and by the solution of which the true fat is able to mingle more uniformly with the other constituents of the chyme. Being further changed in the intestinal canal fat is rendered capable of absorption by the lacteals."

C. Q. 20. Professor, are the above-quoted standard authorities and were they published prior to 1869?

A. These various works were considered good authority at the dates of their respective publications, and I have no doubt they were all published at or before 1869.

C. Q. 21. From the above authorities I will again ask you to state in full detail the conditions under which artificial digestion should be conducted in working the process of such digestion.

A. The conditions as set forth by the authors quoted are, in the first place, the presence of some proteid substance, such as the flesh of an animal, white of an egg, or the like, the presence of fresh or active pepsin obtained either from the stomach of the living animal or from the lining membrane of the stomach of one recently killed, a sufficient quantity of dilute acid, and a temperature in the neighborhood of 100° F. These conditions would secure artificial digestion, and the same would be the more rapid as the comminution of the digestible material was more complete.

C. Q. 22. Please state the conditions which Mége directs to be observed in conducting the process of artificial digestion set forth in the patent.

A. He directs the mixing of a large amount of highly comminuted fat with a relatively small amount of an artificial gastric juice containing pepsin and biphosphate of lime, which would, I think, be the equivalent of hydrochloric acid, and he further directs that it is to be heated to a temperature not to exceed 103° F.

C. Q. 23. Please describe the nature of the action of gastric juice upon food in the stomach.

A. In so far as that food consists of proteids the action of gastric juice is substantially the conversion of such proteids into materials, known as peptone and parapeptone, both of which are soluble, and thus capable of absorption into the vascular system.

I omit mention of various other more or less determined
173 changes which have been asserted to take place, those which I have described being the principal and important ones. Upon starchy foods, such as the greater part of vegetable products, as well as upon the greasy matter of fats, gastric juice is not believed to have any action.

Adjourned to Wednesday, November 28, 1883, at 11 a. m.

Met pursuant to adjournment on Nov. 28, 1883, at 11 a. m.
Present: Same as before.
Adjourned to Thursday, Nov. 29, 1883, at 10 a. m.

C. Q. 24. Please explain what is termed the "ferment action" of the gastric juice upon substances with which it is brought in contact in the stomach.

A. This ferment action belongs to a class of actions denominated catalytic, of which we have numerous examples both in inorganic and organic chemistry. It may be described in general terms as a chemical reaction between two or more substances brought about by the presence of a third, which third body may or may not enter into the reaction, but whether it does or not remains itself unchanged at the end, and does not seem to suffer any loss or diminution. The earliest known and simplest of these is the action of finely divided platinum in causing the union between various combustible bodies, such as hydrogen, alcohol, marsh gas, and the like, and the oxygen of the air. A small portion of finely divided platinum, known as platinum black, will in this way cause the oxidation to ascetic acid of an indefinite amount of alcohol. This same property has recently been utilized in the manufacture of anhydrous or crystallizable sulphuric acid. In this process a mixture of sulphurous acid gas and oxygen being passed over a quantity of heated platinized asbestos or asbestos coated with platinum the two gases unite to form anhydrous sulphuric acid. In the same way a small portion of oxide of cobalt placed in a solution of bleaching salt will cause the liberation of oxygen from the latter as long as the supply of the
174 material is kept up. Similarly, when a portion of a material known as pepsin, and which may be separated from gastric juice, is brought in contact with some such animal matter as meat, the white of an egg, or the like, together with a quantity of dilute hydrochloric acid, the animal matter referred to will gradually dissolve, being converted substantially into compounds known as peptone and parapeptone, and this action will continue indefinitely, a given amount of pepsin being able in this manner to convert any amount of such animal matter, provided the products of the change are removed and the supply of dilute acid maintained. For this reaction the temperature must be maintained within moderate limits, not going very much above 100° Fahrenheit or as low as that of freezing. During this action the pepsin appears neither to increase or diminish in amount, nor to suffer any loss of power. This sort of fermentation also occurs in the action of the saliva upon vegetable food, such as starch, but is unlike the familiar fermentation developed in connection with the yeast and the like, as in the raising of bread, the manufacture of beer and wine, etc., because in this latter case the fermentation is occasioned by an organized structure whose own growth and development is essential to the reaction and which passes through a life history of development, growth, and decay as a necessary feature of the action.

C. Q. 25. You have before referred to Dr. Foster's text book of physiology. What does he say regarding the nature of the ferment action of gastric juice in digestion?

A. Dr. Foster, in the book referred to, gives a very full discussion of this subject under the heading "Gastric Juice," beginning on page 188 and ending on page 195, which is entirely in accord-

ance with the statements made in my last answer. As a concise quotation I may, however, quote from page 193 the following paragraph:

"Nature of the action.—All these facts go to show that the digestive action of gastric juice on proteids, like that of saliva on starch, is a ferment action; in other words, that the solvent action of gastric juice is essentially due to the presence in it of a ferment body. To this ferment body, which as yet has been
175 only approximately isolated, the name pepsin has been given. The glycerine extract of mucous membrane, especially of that which has been dehydrated, contains a minimal quantity of proteid matter, and yet is intensely active. The elaborate method of Brücke gives us a residue which possesses none of the ordinary proteid reactions, and yet in contact with normal dilute hydrochloric acid is peptic in the highest degree. We may therefore safely assert that pepsin is not a proteid. Brücke's residue contained nitrogen, but it would be hazardous to assert that that residue was nothing but pepsin. At present the manifestation of peptic powers is our only test of the presence of pepsin."

C. Q. 26. The great weight of authority is to the effect that the solvent action of gastric juice is essentially due to the presence in it of "a ferment body," is it not?

A. The term "ferment body" being confined to the meaning which I have explained, which excludes such ferments as yeast and those causing the ascetic butterine and like fermentations, your statement is correct.

C. Q. 27. In the action of gastric juice upon the fats it does not act upon the fatty globules themselves, but only upon the animal tissue enclosing them?

A. That is correct.

C. Q. 28. What does it do to the tissue?

A. It converts it mainly into peptone and parapeptone.

C. Q. 29. Fibrine forms a large constituent of muscular tissue, does it not?

A. It does.

C. Q. 30. Please explain the change which takes place when this animal tissue is transformed into peptones and parapeptones.

A. As regards its physical change, this is confined to the change from an insoluble to a soluble body; as to the chemical change, I presume that this has been studied, but I do not now recall with what result.

C. Q. 31. What is the change in form?

A. In the presence of a slightly acid liquid, a change from a solid to a solution.

C. Q. 32. Would it be what is commonly and untechnically called "a dissolving?"

176 A. It would be a dissolving action.

C. Q. 33. Turning now to the patent, please state what division is there made by Mége as an expression of the different stages or steps in the process therein set forth.

A. Mége, in his specification, gives in all nine divisions, the first

five of which only cover what I have described as the essential features of the process, the next three having to do with the further treatment of his product in the production of what he calls a more perfect butter, and being substantially equivalent alternative treatments, and the last division has reference to the further treatment of the stearine removed during the process, so that it may be employed in the manufacture of candles or the like.

C. Q. 34. Please explain fully what you mean by the statement, "the first five of which only cover what I have described as the essential features of the process."

A. What I have described as the essential features of this process are the production from a fresh or preserved fat of a greasy matter without a fatty or tallowy taste by rendering finely disintegrated fat at a sufficiently low temperature and the separation of the same by crystallization, and subsequent mechanical treatment of such a portion of its stearine as will leave the remainder with a consistency substantially that of ordinary butter. Comparing with this the divisions of the Mége patent, I find in the first a method for preserving the fat until it is ready to be treated, this consisting in the immersion of the fat in an antiseptic solution. In the second division of the patent I find described the disintegration of the fat by crushing under millstones. In the third division I find a treatment consisting of two minor steps, the first being a digestion by which the tissues are more or less broken up and dissolved and a heating by which the greasy substance is completely separated from the membranous matter, this separation being also assisted by the addition of salt. In the fourth division I find described the crystallization of the stearine, and in the fifth division the mechanical separation or removal of the crystallized stearine by the centrifugal and by a press.

177 C. Q. 35. You have mentioned the first five steps set forth in the patent as embodying the essential features of the process. Do you mean that these, taken as a whole, are complete, and that whoever works these five several steps in strict accordance with the direction given has in his process and resulting product embodied the invention set forth and claimed in the patent?

A. I mean this and a little more—that is, in the first place, in carrying out these directions the operator should use such knowledge of the art as existed at the date of this patent, and also that he might use any known equivalent for any step or steps without failing thereby to carry out this process and produce this product.

C. Q. 36. You say you mean this and also a little more. Why should not the operator desiring to work upon a commercial scale not follow strictly all the directions given in the patent and work the process precisely as therein directed?

A. Because his knowledge of the art might teach him that certain of these directions might be advantageously modified; thus, if he had experience in the use of the centrifugal and of the press in the separation of fatty mixtures, he might know that a press would be more efficient than a centrifugal; or, in view of the more perfect comminution effected by a modern hashing machine, he might

know that he could omit the artificial digestion in consequence of the more complete rupture of the fat-enclosing cells secured by these hashers.

C. Q. 37. But did not you substantially assume the position on the direct examination that the art of making butter from fat was an entirely new art introduced by Mége?

A. I did; but did not assume the position that the art of rendering fats and separating stearine from tallow or the like was a new art at that date.

C. Q. 38. In the patent Mége directs that there be first a complete crushing of the fat, and then directs that it be reduced to a molten condition under circumstances "so that the heat does not exceed 103° F." Would it not be difficult to effect a complete separation of the fat from the tissue in a practical industrial operation at this low rate of temperature and when the temperature was permitted at no time to rise above 103°?

178 A. In the first place, I do not understand that the Mége patent contemplates the separation of the greasy matter from the tissues at the temperature you indicate. This is the temperature which he points out as requisite for the artificial digestion. Further on, when he speaks of the separation of the greasy matter, he speaks of slowly raising the temperature to about 103° F., so that the matter shall completely separate. This I understand to be a direction to raise the temperature to this point or above, if necessary, until the desired result of separation is obtained. I think it would be extremely difficult to secure such a separation on a commercial scale if the temperature were never raised above 103° Fahrenheit with such fats as I have experimented with.

C. Q. 39. What are the difficulties in the case, as you found them? Take, for example, beef fat.

A. The melted fat substances and the membrane remain mingled as a sort of emulsion, which would require a very long time to separate by settling, and during this time the greasy substance would acquire a gluey taste from the membrane, which would undergo some decomposition.

C. Q. 40. Then, in this respect, if the temperature were confined to 103° F., this would be inoperative to produce on a practical scale the butter-like product desired?

A. As far as my knowledge goes, it would be.

C. Q. 41. When did you first make the experiments with beef fat above referred to and when the temperature did not rise above 103°?

A. I think it was some time in 1875. It was in connection with a suit brought by the owners of the Mége patent against Rafferty & Williams. I could tell from my note books at home the exact time, but do not recall anything at this moment that enables me to be certain about the date, except that it was many years ago.

C. Q. 42. Were you employed at that time as an expert by the owners of the Mége patent or by the defendants, Rafferty & Williams?

A. By Rafferty & Williams, who were rendering tallow at high temperatures.

C. Q. 43. You have spoken of your note books. Did you make notes of what occurred or what you observed in making these experiments?

179 A. I made some notes; but what I referred to were my diaries, which would give me the dates at which I made these experiments.

C. Q. 44. Will you kindly produce the notes relating to those experiments for examination on your return to-morrow?

A. I will look for them, and if I find that I can with justice to those for whom the experiments were made furnish them to you I will do so.

C. Q. 45. That suit was dismissed long ago, and you have heard nothing about it during recent years or since the reissue of the patent?

A. I have heard nothing about the suit and have really no positive knowledge as to its condition, but think it quite likely that it was discontinued or abandoned.

C. Q. 46. Did you make an affidavit in that case embodying the conclusions you arrived at?

A. None that I recollect.

C. Q. 47. How extended were those experiments?

A. I made five or six at my own laboratory and three or four at the works of Rafferty & Williams.

C. Q. 48. What was the range of the amount of fat treated by you in these several experiments?

A. In the experiments at my laboratory I operated upon about a pound at a time. At the works of Rafferty & Williams the quantities treated were from 500 to 1,000 pounds.

C. Q. 49. What did you do in each instance with the "emulsions" you have spoken of, which you have referred to as resulting from the experiments?

A. The emulsions were allowed to stand until the tissue settled out, being kept at the temperature mentioned for many hours for that purpose. The separated greasy substance was drawn off and put in bottles in the experiments made at the works, in order that I might take it home with me and examine its smell in a pure atmosphere. Where the experiments were made in my own laboratory I simply poured off or drew off the greasy substance into beaker glasses, where I examined it at once or during the next few days.

C. Q. 50. What was then done in each instance with the

180 contents of these bottles and also of these beaker glasses?

A. It was, I believe, in all cases handed over to my janitor, who disposed of it as soap fat.

C. Q. 51. In any of these experiments, either in the laboratory or at the factory, did the temperature at any time during the process or towards the close of the process rise above 103° F.?

A. Not so far as I recollect in the experiment to which I have alluded.

C. Q. 52. Please describe more particularly this "gluey taste from

the membrane which would undergo some decomposition" where the process is continued for "many hours."

A. It is very difficult to describe a taste, and I do not know that I can define this one better than to say that to my mind it suggests the smell which I associate with carpenter's glue.

C. Q. 53. Can you state what chemical or other change takes place in this decomposition of the membrane to which you have referred in producing this taste?

A. I cannot.

C. Q. 54. It is somewhat analogous to putrefaction, is it not?

A. Very probably it is.

C. Q. 55. Is this taste accompanied by a corresponding odor?

A. The taste and odor are in this case the same thing, the taste being simply an expression of the fact that when the substance is placed in the mouth the odor from it acts on the olfactory nerves through the "posterior nares" or passage opening from the nose into the rear of the mouth.

C. Q. 56. In your answer you have simply stated what scientific men have regarded as the true relation of taste and odor in the usual and ordinary cases?

A. I have, as regards such tastes and odors as this. There are, of course, tastes which are not the same result of odors, or, in other words, there are substances which affect the sensitive nerves of the tongue and are so recognized. Such tastes are what we de-
181 scribe as sweet, sour, bitter, hot, etc., but the distinguishing flavors of different fruits, vegetables, and other articles of food, apart from any mere differences of sweetness, sourness, or the like, are not recognized by the tongue but only by the nose, and to the same category belongs such taste as the flavor of butter, tallow, of putrefying substance, and the like.

C. Q. 58. Have you made any experiments similar to those you have detailed, and in which the temperature did not rise above 103° F., since the date of the series of experiments you have mentioned?

A. I do not recollect any.

C. Q. 58. What is the substance referred to in the patent as biphosphate of lime? Please describe its properties and give its chemical formula.

A. It is the substance more generally known as acid phosphate of lime. It is a highly acid hygroscopic substance, and its formula P. Q. 4 CA. H 2, according to Fowne's Chemistry of 1868, which I happen to have with me; but as the composition of phosphates is a matter about which there has been much discussion, I should not like to be too certain as to the accuracy of this formula without consulting some more recent authority.

C. Q. 59. Will you kindly consult such authorities, so as to be prepared to more definitely answer this question to-morrow?

A. I will.

C. Q. 60. What is the chemical difference between lime biphosphate and bilime phosphate?

A. Lime biphosphate would be the old way of naming acid phosphate of lime; bilime phosphate would be a term which I never

encountered, but which I should suppose might have been used to indicate the neutral or bicalcic phosphate, which is found when a solution of the acid phosphate is precipitated by an alkaline carbonate. The expression may possibly have been used to indicate the tricalcic phosphate which exists in bones.

C. Q. 61. Will you examine the subject so as to tell us whether both lime biphosphate and bilime phosphate are bodies having an actual existence in chemistry; and, if so, the formula of each?

182 A. As to the term bilime phosphate, I might have to look a long time in old works on chemistry before I could find such a term, but if you can give me any reference to a work in which it occurs I can then probably investigate the subject readily, and will do so with pleasure.

C. Q. 62. Is what is termed in the patent biphosphate of lime a commercial product?

A. Substantially.

C. Q. 63. What do you mean by "substantially?"

A. It is manufactured in large quantities and sold for various purposes. Thus, as a solution, it is sold for medical purposes under the name of acid phosphate of lime, and as a powder, mixed with a little starch to keep it dry, is sold for use with soda as a baking powder. In an impure condition, mixed with some sulphate of lime, it is sold as a fertilizer.

C. Q. 64. Where can you procure it in a pure condition or in the form intended in the patent, and under what name?

A. I think that any of the conditions which I have mentioned would be suitable for use as directed in the patent, and in this country it could be bought under any of these forms if acid phosphate of lime were asked for, or even if the biphosphate were asked for from a dealer in chemicals.

C. Q. 65. You say that any of the conditions you have mentioned would be suitable for use as directed in the patent. Although a repetition, will you please again detail those different conditions or forms?

A. A solution, also the acid part of baking powders, which consists of two packages—one of acid and one of soda—and in bulk as a fertilizer.

C. Q. 66. What solution do you refer to?

A. The solution used for medical purposes.

C. Q. 67. How was the biphosphate of lime prepared which you used in your experiments?

A. By treating bone ash with strong sulphuric acid, dissolving out the acid phosphate with water and evaporating the solution to dryness.

C. Q. 68. Did you prepare it yourself or purchase it already prepared?

183 A. I used some which I had on hand, having prepared a great quantity many years ago.

C. Q. 69. What title does Mége give to each of the five several steps constituting the process at issue, as you regard it?

A. Mége gives the title "neutralization of the ferments" to the

first section of his description, "crushing" to the second, "concentrated digestion" to the third, which, however, includes the digestion, the preparation of the gastric juice, and the separation of the oily matters from the membrane; "crystallization in mass" to the fourth, and "separation by centrifugal force" to the fifth, in which he also mentions the use of a press, as well as of a centrifugal machine.

C. Q. 70. Does Mége anywhere in this patent intimate that the first step of the actual neutralization of the ferments in the fat by the action of sulphate of soda and sea salt thereon is unimportant or that it may be omitted?

A. He does not.

C. Q. 71. What is your opinion as to whether this actual neutralization of the ferments in the fat by treatment with sulphate of soda and sea salt is essential in the patented process?

A. In my opinion, it is essential that these ferments should be neutralized either by this or by some equivalent treatment for the practical success of the process on a commercial scale.

C. Q. 72. Mége directs that this treatment be applied to the fat immediately or as soon as possible after the death of the animal. Please describe the nature of the ferments in the fat immediately after the killing and before it has been preserved by ice or any similar preservative, and which ferments he neutralizes or destroys by the action of the sulphate of soda and sea salt.

A. These ferments I do not doubt are the germs floating in the air, which Pasteur and Tyndall have shown are the necessary causes of all ordinary fermentation and putrefaction.

C. Q. 73. Are these germs what these writers call "spores," and are they organisms which develop and pass through a life? And, if so, please sketch their history or development.

184 A. They are sometimes called "spores," though I think more generally "germs." They have never been rendered visible, even with a microscope, so that we can only infer they are organized, but they are undoubtedly the sources of those forms of organism which are only developed where they have access. In some solutions or in contact with some forms of organic matter these develop into microscopic structures which have the general appearance of minute rods. Others develop into a plant-like growth and others into forms resembling a tadpole and which are endowed with motion. The technical names, which are very numerous, that have been given to different varieties of these I do not now recall, but if you wish it I will bring with me to-morrow a book of Pasteur's which has drawings and descriptions of a great number of these.

C. Q. 74. I should be pleased to have you do so. Please explain the nature of the action of these "spores" upon animal fats and the effects produced.

A. They undoubtedly attach the animal fluids present on the surface of the tissues, and occasion in them those changes recognized as putrefaction.

Adjourned to Friday, Nov. 30, 1883, at 10 a. m.

Met pursuant to adjournment Friday, Nov. 30, 1883, at 10 a. m.

Present: Same as before.

C. Q. 75. Have you brought with you the notes giving the details of your experiments referred to yesterday?

A. I was unable to find among my old note books any referring to the experiments mentioned yesterday, but I brought with me my diary for 1877, in which I find, on January 24, the following entry: "Rafferty and Williams, 413 East Twenty-fifth street, examined process and tested rendering tank with the monitor." This enables me to be certain that the experiments alluded to were made about that time.

C. Q. 76. Did you look anywhere else, except in your old note books, for the notes which you made at the time, as stated yesterday?

185 A. I did not, because there was no other place to look, as I keep all my note books in the drawers of a secretary, and have no other place where there would be any chance of finding what was not preserved there.

C. Q. 77. What is your explanation of the notes you stated you made regarding those experiments at the time not being found now in your old note books?

A. There are two explanations. One is that I may have made these notes as loose memoranda on papers which I did not preserve, or that I may be mistaken in the impression that I made memoranda of these experiments at the time. The object of these experiments was simply to determine whether fat, such as was then used by Rafferty and Williams, could be rendered at a temperature not above that stated in the Mége patent. As this simply required that the temperature should be kept below this point, it may have happened that I did not make any memorandum or record of the temperature, but simply observed that it did not get above this point.

C. Q. 78. What can you state further regarding biphosphate of lime after consulting the authorities?

A. I find the term biphosphate of lime used in the older chemistries to indicate the substance which is now commonly called acid phosphate of lime, or, in commerce, superphosphate of lime, or, in strict chemical phraseology, tetra hydrogen calcium phosphate, its formula being H4, CA (PO 4) 2. The name biphosphate I find in a "Manual of Chemistry," by W. F. Brands, London, 1836, vol. II, page 600; also in a work entitled "The Elements of Experimental Chemistry," by William Henry, Philadelphia, 1831, vol. I, page 498; and I find the name tetro hydrogen calcium phosphate and the formula given above in a work entitled "A Treatise on Chemistry," by H. E. Roscoe and E. Schorlammer, New York, 1879, vol. II, part 1st, 206. The word calcium is the name of the element characteristic of lime, ordinary lime being oxide of calcium. In giving the formula yesterday from Fowne I made a mistake which I recalled afterwards and will now correct. The formula which I took from Fowne was obtained by substituting calcium for sodium in

186 his formula for the corresponding sodium salt, as I did not then find the formula for the lime salt, and in doing so I forgot at the moment that calcium was a bibulent element, and therefore would require two molecules of acid to saturate it. Making this correction, the formula, according to Fowne, would be (PO 4), 2 Ca. H4., which agrees with the formula given by Roscoe and Schorlammer, and is given correctly by Fowne on page 371.

C. Q. 79. Is the subject mentioned in the patent as biphosphate of lime deliquescent—*i. e.*, does it readily and rapidly absorb moisture?

A. It is deliquescent and readily absorbs moisture if exposed to the air.

C. Q. 80. For this reason when exposed to the air it is difficult to readily and accurately weigh it so as to determine its amount, is it?

A. There is no practical difficulty in this respect. The absorption of moisture is not rapid enough to produce an appreciable difference in ordinary commercial weighing, such as would be done in a store or factory and for accurate weighing in the laboratory. The difficulty is overcome by weighing the material in a closed vessel after it has been dried in the usual manner.

C. Q. 81. Did Mége first discover the fact that sulphite of soda and sea salt would neutralize the ferments in fat—that is, the antiseptic character of these articles in solution?

A. Not in a general sense, the antiseptic property of salt being known from the earliest times; but he may have discovered that the two materials in the proportions he mentioned would effect the desired result with special completeness or economy.

C. Q. 82. How about sulphite of soda?

A. Sulphite of soda has, I think, been credited with antiseptic properties, but I do not now remember in what connection.

C. Q. 83. You speak of "proportions." Does the definite proportion in which these articles are mixed as mentioned in the patent affect the combined action upon the fat and so that it is an essential element?

187 A. Not so far as I am aware; but it is possible that in the proportions named these materials may be more efficient than in other proportions, so that a less quantity would effect the desired result.

C. Q. 84. In the experiments made by you which you have described do you remember whether you observed any change or modification in any respect in the character or appearance of the fat after it had been immersed in the solution of sulphite of soda and sea salt, as directed in the patent?

A. In the experiments which I have described in connection with the suit against Rafferty and Williams the fat was not treated with the solution, but was used fresh or preserved with ice. The only experiment which I made in which the fat was treated with this solution was conducted at the works of the Commercial Manufacturing Company, and in that case I have no recollection of noticing, and in fact feel sure that I did not notice, any change.

C. Q. 85. In that case how many hours was the fat immersed in the solution?

A. It was immersed in the solution over night; about ten or twelve hours.

C. Q. 86. When you were making the investigations for Rafferty and Williams in the suit against them under the Mége patent, why did you not follow the directions of the patent and first immerse the fat in this antiseptic solution?

A. Because the use of this solution was not involved in the question I was then examining. They were rendering fresh fat at high temperatures, and the object of my experiments was to find out whether a better result was obtained by rendering the fat at their temperature or at that of the patent.

C. Q. 87. What temperature did they employ?

A. Somewhere about 150° and over; and I may mention that none of their material was fit for the manufacture of butter and that they soon abandoned their process, as I was informed, because the product proved unsalable.

C. Q. 88. Did they place their melted fat in a room where the stearine crystallized and then press out the oil?

A. They did.

188 C. Q. 89. Were they doing this on a commercial scale when you visited their factory or at any period about that time?

A. They were.

C. Q. 90. Passing now to the second step set forth by Mége in this patent entitled crushing, please state whether or not this minute subdivision of the fat, previous to its rendering, was ever practiced in the art, especially where pure fats were sought for perfumery or other uses, prior to the time of Mége's invention.

A. It was.

C. Q. 91. Can you cite any passages from any works published prior to that time setting forth this procedure?

A. I can. For example, the most striking instance is that found in a work entitled "Guide Pratique du Parfumeur," by A. B. Lunel, published in Paris probably in 1864. At page 179 I find as follows—I now give my own translation of the original, which is French: "Lard pomatum. Mince up twenty kilos of lard or marrow, grind it in a mortar, wash it thoroughly until the water ceases to be turbid, strain and melt it at gentle heat, adding to it sixty grammes of alum and a handful of salt; boil up several times, skimming well. When it has become entirely liquefied pass it through a hair cloth or wire sieve; allow the fat to settel for an hour, then drain it off thoroughly, without leaving any water. If it is desired to have it perfectly pure remelt it over a water bath, taking especial pains to remove all traces of water." Again, in the work entitled "The Artist's Manual," by James Cutbush, published in Philadelphia, 1814, in vol. 2, under the article "Oils," I find: "Animal oil in its purest state is obtained by cutting fresh suet in shreds and liquefying it into boiling water, and then passing it through a piece of thin gauze in order to separate the cellular membrane. When thus purified it is of a yellowish white color, moderately hard, and nearly destitute of odor or flavor."

Again, in the work entitled "A Manual of Chemistry," by W. F. Brande, London, 1848, vol. 2, page 1264, I find as follows: "To facilitate the operation (*i. e.*, to liquefy the fat), the fat should be chopped into small pieces to allow of the more uniform influence of heat."

189 C. Q. 92. Omitting for the present the third step, we will pass to the fourth step set forth by Mége, entitled "crystallization in a mass." You stated that the scientific fact that when fat is molten the stearine combined within it crystallizes at a higher temperature than the other compounds of the fat was well known. At the time of Mége's invention had the knowledge of this fact been applied to effect the separation of the stearine from the fat in the art?

A. It had; specially in the preparation of what was known as vaxeme or "summer tallow." For example, in a work entitled "A Treatise on Chemistry Applied to the Manufacture of Soap and Candles," by Campbell Morfit, Philadelphia, 1856, I find on pages 331 and 332 as follows: "Vaxeme or summer tallow. This kind of stock is made by granulating and pressing ordinary tallow. The separation of a portion of the oleine in this manner improves the quality and hardness of the tallow and adapts it especially to the manufacture of candles for the West Indies and warm climates. The process consists in steaming the tallow in wooden tubs for several hours, drawing off the upper clear portion after sufficient repose for settling, and gradually cooling in large tubs from 70° to 80° Fahrenheit. These tubs must have a cullendered diaphragm about six inches from the bottom, which should be covered with coarse flannel cloth. During repose the solid portion of the tallow separates in granules from the superstratum of liquid oleine and subsides upon the diaphragm, thus allowing the oleine to infiltrate through upon the opening of the cock at the bottom and be drawn off into receivers. The solid residue, upon being subjected to pressure in Russia canvas bags, yields more oleine and becomes hard and white."

C. Q. 93. Passing now to the fifth step set forth by Mége in this patent, entitled "separation by centrifugal force," please state whether this method by centrifugal force of separating the stearine from the molten fat had been employed in the art prior to the time of Mége's invention.

A. It is referred to in the work from which I have just quoted in the following language:

"Centrifugal mill.

190 "Another device for the separation of the fluid from the solid portion of fat is centrifugal force—an ingenious suggestion of recent date—but little is known of its practicability, as no trials of its efficiency have yet been made in this country or elsewhere to any great extent."

Then there follows a description, with drawings, of the now well-known apparatus usually called a centrifugal, after which as follows:

"The granulated tallow or lard being placedin the drum A, the

latter is put in motion by the gearing E and steam power, which drives the shaft D at a speed of 500 to 1,000 revolutions per minute. The centrifugal action throws the granulated fat against the wire gauze of the cylinder, which arrests the passage of the solid particles, while it permits the escape of the fluid or oily portions through its meshes, and whence it falls into the outer jacket and is to be drawn off through the cock F. Ten minutes suffices to dry a charge of 200 pounds of granulated fat."

C. Q. 94. Was this method of separation by centrifugal force part of the process employed at the factory of the Commercial Manufacturing Company previously referred to?

A. It was not.

C. Q. 95. Returning to the third step set forth by Mége in this patent, entitled "concentrated digestion," we notice first a direction for the use of a water bath in conducting this step in the process. Was the use of a water bath in reducing fat to a fluid state known in the art prior to the time of Mége's invention?

A. It was.

C. Q. 96. Was the use or application of artificial digestion to the reduction of raw fat or suet to a liquid state new or old in the art at the time of Mége's invention?

A. It was new in two respects: By reason of the employment of gastric juice and by reason of the employment of a very low temperature, considerably below that at which rendering had ever before been carried on.

C. Q. 97. I conclude, then, that the result of your investigations as set forth in your answers to the preceding questions leads to the conclusion regarding the several steps of the process set forth in this patent that, considering each step separately, the only novel
191 step new to the art at the time of Mége's invention was embodied in No. 3, above referred to, entitled "concentrated digestion." Am I right?

A. The only step which, considered by itself, was new in the art of rendering animal fats was, as you say, that indicated under number 3.

C. Q. 98. Omitting the observance of the peculiar directions given in that third step, had animal fats been melted and then been placed in a room where the temperature varied from 80° to 98° until the stearine crystallized, and then placed in the press and the oil pressed out, in industrial operations prior to 1869?

A. Tallow or other animal fat rendered at a high temperature had been thus crystallized and treated, though, as I believe, at a somewhat lower temperature, so as to produce a larger yield of stearine and a more fluid oil; but I do not find that any such treatment had ever been applied to any fats rendered at low temperature, if, indeed, any fats had ever been rendered for commercial purposes at any temperatures notably below the boiling point of water.

C. Q. 99. Does Mége anywhere in the patent state or even intimate that the treatment with gastric juice in artificial digestion directed in that third step may be omitted?

A. He does not.

C. Q. 100. Since, then, this treatment with artificial gastric juice, in accordance with the direction as to preparation, temperature, etc., given in that third step, was the only thing that was novel in the process set forth in the patent, and since Mége nowhere even intimates that it may be dispensed with, why did you omit, in your answer to direct question 9, in which you gave a statement of the essential elements of the invention set forth in the patent, to make mention of this artificial digestion with gastric juice, unless possibly it might be remotely inferred from the word "equivalent" in the phrase "by a combined application of mechanical or equivalent treatment and heat?"

A. In the first place, I do not understand that the use of gastric juice in connection with the application of heat, etc., is the
192 only novel feature of the Mége invention. On the contrary, I consider that the entire combination of steps recited in this patent, or their equivalents, is the important novelty of the Mége invention, which, as I understand it, consists in a combination of substantially known processes for the production from animal fats of an artificial butter. The essence or characteristic features of this third step I regard to be, not the employment of gastric juice, which was a manifest equivalent for a more thorough comminution of the material or perhaps for a slight increase in temperature, but the rendering or separating the greasy substance from the tissues at such a low temperature as should prevent it from acquiring any taste of fat.

This being my view as to the true relation of the gastric juice to the other agencies enumerated in this section of the description, I think that my reference to the same in the direct answer to which you have referred places these matters in their true mutual relation, indicating, as it does, that the use of the gastric juice is a substantial equivalent, as far as it goes, to the mechanical treatment of grinding or crushing.

C. Q. 101. Does Mége say anything of that kind in his patent?

A. I find no formal statement to that effect, but I think this is a plain inference from the entire language used.

C. Q. 102. How could the use of the gastric juice be an "equivalent" for the mechanical treatment of grinding or crushing in the process when Mége directs that, previous to the application of the gastric juice in the working of the process, there be a complete crushing under the millstones "which completely bruised all the cells?"

A. Because, in the first place, it was well known that the effect of the gastric juice was to secure the same result that was aimed at by the crushing, only in a more perfect manner—that is to say, it was well known that the gastric juice would entirely destroy or break up the minutest cells, which the grinding at best could only bruise; therefore, after having accomplished all he could by grinding, Mége used gastric juice to complete the breaking up of the
193 cells and the liberation of their contents. Improved means of hashing have rendered this treatment with gastric juice un-

necessary and admit of an improvement on the Mége process which consists in the omission of this treatment.

C. Q. 103. You say that the grinding at best could only bruise the cells. Was not this the function of the grinding to bruise the cells, and was not the very work then to be performed the entire separation of the fatty globules from the contiguous and partially enclosing tissue so as to obtain the molten fat separate and apart from all organized tissues, and did not Mége make use of gastric juice to effect this work of complete separation by virtue of its potent action in dissolving the tissue when maintained at the animal temperature, and was not the performance of this work the subject, aim, and purpose of this third step, entitled by Mége "concentrated digestion," as distinct from the second step, entitled "crushing?"

A. My understanding of this part of the specification differs from what you have stated in several respects. My belief is that the grinding was designed to disintegrate the fat as far as possible and to the extent of not only separating the individual cells from each other, but even of bruising them. In this state, however, the application of a moderate heat alone would not have sufficed to set free the enclosed oily substance from these cells, even though it were rendered fluid. It was for this reason that the aid of the gastric juice was invoked to complete by its solvent action the mechanical destruction of the cell walls, and this it did by its peculiar ferment action strictly limited to an animal heat. At this temperature, however, even though the fat were liberated from the cells, an entire separation of the greasy substance would not be effected, and therefore Mége directs a heating not strictly limited to this temperature, but to be continuously raised until the desired separation is effected. This is the idea which this part of the specification conveys to my mind when I read it.

C. Q. 104. But did you not state, in answer to cross-question 49, that in the experiments conducted by you and in which the temperature was not allowed to rise above 103° F. that the tissues settled out and the separated greasy substance was drawn off and
194 put in bottles in the experiments made at the works, and that you poured off or drew off the greasy substance into beaker glasses, in the experiments at your laboratory, and how do you reconcile this statement with that made in your last answer?

A. I made the statement which you have quoted, and the same is easily reconciled with the other answer, as follows: In answer to cross-question 39 I had stated as follows, in reference to the experiments referred to in the answer to question 49: "The melted fatty substances and the membranes remained, mingled as a sort of emulsion which would require a very long time to separate by settling, and during this time the greasy substance would acquire a gluey taste from the membranes which would undergo some decomposition." In my last answer, when I said that at a temperature of 103° the greasy substance and membrane would not separate, I did not, of course, mean that they would not separate at all, but only that they would not separate within such limits of time as would render the process practicable and the product useful.

C. Q. 105. Referring now to the first part of your preceding answer relating to the grinding of the fat, you say, regarding the ground fat: "In this state, however, the application of a moderate heat alone would not have sufficed to set free the enclosed oily substance from these cells, even though it were rendered fluid." If raw beef were run through the "hashers" and then raised to a moderate temperature—*i. e.*, to the animal temperature of 103° F.—and no addition made of gastric juice, would the enclosed oily substance be set free from the cells, so as to pass into a molten state?

A. It would, under favorable conditions, if sufficient time were allowed.

C. Q. 106. And so as to be free from the gluey taste and other effects of decomposition?

A. Certainly not. It would acquire the gluey taste I have mentioned before there was any practical separation, and would be unfit for the manufacture of an article of food.

C. Q. 107. What is the size of the fatty globules enclosed in the cellular tissues of animal fats?

195 A. According to Strecker these globules in man reach the size of $\frac{2}{10}$ths of one millimetre, which would be expressed by the fraction .007874 of an inch.

C. Q. 108. Are they large enough to be within the limits of vision?

A. Not without a microscope.

C. Q. 109. Can you give a brief quotation from the authority you mentioned on that subject?

A. The work is entitled "A Manual of Histology," by Professor S. Strecker, New York, 1872. On page 81 I find as follows:

"Fat cells in connective tissue. In various parts of the animal body the connective tissue contains great numbers of cells, which, enlarging in all their dimensions, attain a considerable size and have in their interior a large fat drop completely filling them. The diameter of these cells reaches in man 0.2 millimetres. Their form is round or somewhat oval. Where such fat cells are deposited in great number in the connective tissue, they are divided into separate groups or lobules by strong trabeculæ. Each of these lobules possesses its own system of vessels, which, with their branches, reach into the interior from the surface, and are accompanied with fine bundles of connective tissue. Here they divide into such numerous capillaries that the smaller groups of cells, or even the individual fat cells, are surrounded by vascular loops."

Adjourned to Saturday, Dec. 1, 1882, 3 p. m.

Met, pursuant to agreement, Dec. 1, 1883, at 3 p. m.

Present: Same as before.

C. Q. 110. In the remaining steps of the patent to which you have referred on the direct examination—*i. e.*, VI, VII, and VIII—does not Mége in the patent in each instance direct a treatment with "mammary pepsin" procured from the udders of a cow?

A. He does.

C. Q. 111. Does he anywhere intimate that this may be dispensed with?

196 A. Only in his claim, where he refers to his product as the improved material herein described, with or without the additions of substances to change the flavor, consistency, or color, as set forth.

C. Q. 112. You have already construed this claim as covering the product, as completed at the end of the sixth step, as complete in itself in the issue presented in this case, but I ask you does Mége, in the body of the specification, in the directions he gives for conducting the processes, as set forth in the VI, VII, and VIII divisions, give any intimation that the use of "mammary pepsin" may be dispensed with in conducting the processes therein set forth?

A. He does not.

C. Q. 113. Why, then, in your answer to direct question 9, giving the essential elements of the invention set forth in these steps of the patent, did you not mention this treatment with "mammary pepsin?"

A. I did not intentionally omit it, but regarding it as practically unimportant considered it sufficiently indicated by the expression "milk or some equivalent aqueous fluid."

C. Q. 114. And this is what you meant by the term "equivalent" in this connection also?

A. It was, in the sense that, for the purpose of flavoring and emulsifying the fat, the solution of "mammary pepsin" in cream, the same in water, with an addition of butter, etc., and with the mammary pepsin and water without any addition, were equivalent treatments, and would, in my opinion, have been equivalent to the use of milk or cream without mammary pepsin.

C. Q. 115. But as occurred yesterday, are you not again making Mége use an article as an "equivalent" for the very things which he directs to be employed in connection with that article in the same process?

A. In the sense that two equivalents or articles capable of producing substantially the same effects may be used in succession or conjunction to facilitate a process I am.

C. Q. 116. In answer to cross-question 113 you have spoken of this use of mammary pepsin as "practically unimportant." Do you mean by this that it is not an essential element of the invention in this portion of the patent?

197 A. No; I only mean that experience shows that the desired product can be produced equally well without it.

C. Q. 117. Do you mean, then, that one who buys oleomargarine oil and treats it in accordance with the directions given in paragraphs VI, VII, and VIII of the patent, but omitting altogether the treatment with mammary pepsin, would or would not be employing elements of the invention therein set forth?

A. I do not think that a person doing what you have described would be employing that part of the Mége invention set forth in the VI, VII, and VIII sections of the specification. Whether he would be

employing the invention claimed in the Mége patent would, however, of course be another question.

C. Q. 118. Please explain how, in view of your last answer, you regard this treatment with mammary pepsin as an essential or non-essential element of the process set forth in these steps?

A. Considered as a matter of manufacturing, it is non-essential, because the product obtained would be substantially the same, whether prepared with or without this substance; but as a question of infringement or non-infringement it is my impression that the use of this substance may be essential, because its omission might leave this step of the treatment without patentable novelty in itself.

C. Q. 119. Please explain what you mean by "without patentable novelty" in this case.

A. I mean that in case it should be proved that lard or fatty matter had been churned with cream or milk prior to Mége his right to claim an invention in this connection would be limited to the use of pepsin.

C. Q. 120. Has any account of such use fallen under your observation?

A. Nothing definite that I can now recall, though I think I heard some such thing suggested or possibly mentioned in some patents to one Bradley.

C. Q. 121. Is this possibility the only reason you can give why the use of this substance may be essential?

A. The question involves so much of law rather than chemistry that I hardly feel competent to express an opinion, but it
198 seems to me that the matter would rest to some extent on the practical importance of pepsin as an agent. If, as I believe, it is of little importance and Mége was the first who made an emulsion of any fatty substance with milk in the general manner he has described, then I think the omission of pepsin might not be regarded as substantially modifying the process.

C. Q. 122. You say "as I believe." Have you analyzed the two products, one where mammary pepsin was employed and the other where it was not?

A. I have not analyzed them, but I have examined and tasted them and found them to be indistinguishable by the ordinary means of observation.

C. Q. 123. Does not Mége himself in the patent recognize the fact that it was no novelty to make an emulsion of a fatty substance for the purpose of butter in the statement made at the beginning of paragraph VI, "in the methods hitherto employed the margarine is transformed into cream, and this latter into butter?"

A. In so far as he thus refers to his own previous patents on this subject you are correct.

C. Q. 124. To what patents do you refer?

A. Patents taken out by Mége in England and in Germany, and possibly in France.

C. Q. 125. Do not these patents contain substantially the same statement?

A. I do not now recollect, but if that is so, then Mége must refer

to his own earlier experiments, because, as I believe, he was the first to make oleomargarine into cream and then into butter, as here indicated.

C. Q. 126. Does Mége say in the methods hitherto employed "by me," and have you not given this recognition of the state of the art a forced construction, especially in view of the decision of the French court in a suit upon his patent, to the effect that margarine was old, but that the Mége process of artificial digestion was new?

A. Mége does not refer specifically to his own experience, and I am only led to the construction I have given by the limitations of my own knowledge, as I have never heard of the decision you mention.

Adjourned to Monday, December 3, 1883, 2 p. m.

199 Met pursuant to adjournment December 3, 1883, 2 p. m. Present: Same as before.

C. Q. 127. You have stated that the "ferments" in the fat after the death of the animal referred to by Mége in the first step of his process are organisms, to which a variety of terms have been applied by different writers, and you have spoken of contact with the air as one source from which they are derived. While this is true, may it not also be possible that the fat, or more especially the tissue enclosing it, taken, as Mége directs, as soon as possible after the death of the animal, contains within itself such germs or spores or ferments which commence to perform their work as soon as the vital powers of the animal cease to resist their action? And as bearing upon this point, I will read you the following brief passage from the "Annual Record of Science and Industry" for the year 1875, page 148, published by Harper Bros., 1876:

"Development of bacteria in organic tissues protected from air.—M. Servel recently read an interesting paper on this subject before the French Academy of Sciences. The first two experiments were upon guinea pigs. The live animals were decapitated so that the head fell at once into a chromic acid bath. Examined six days after immersion, the outer parts were hard and preserved, but the cerebral parts were in manifest corruption, and the cerebral pulp, under the microscope, presented a large number of bacteria of all sizes. In experiments the absence of air germs was not sufficiently demonstrated, and M. Servel repeated them with the livers and kidneys of dogs killed for this purpose by femoral bleeding. To eliminate sources of error, and especially substance of air by the wound, he placed a ligature at the level of the hilum of the liver and kidney to be experimented on, the organs were removed, preserving their envelope of connective tissue, and the ligature was used to suspend the organs in the bath. Examination some days after showed that the surface was hardened throughout, but the central parts
200 were full of bacteria; the chromic acid at once arrested their movement. Hence he concludes: First, that MM. Bechamp and Estor's demonstration of the production and evolution of bacteria in organic tissues protected from air germs is quite exact;

Second, that the effect producted by preservative agents is the death of microzymes, or molecular elements surviving in the organs."

A. Such a condition as this extract contemplates is, of course, theoretically, possible; but, to the best of my knowledge, it has been shown conclusively by Pasteur, and also by Tyndall, that neither putrefaction nor the development of bacteria ever took place, either with blood or with portions of meat, when the absolute exclusion of atmospheric germs was secured. The experiments quoted by you manifestly do not show that such exclusion was secured in the experiments quoted, since the cutting off of the animal head and the dissection of the parts mentioned were both performed in the presence of air.

C. Q. 128. If you will recall the experiments of Pasteur and Tyndall referred to by you, do you not remember, as an important particular, that when they were dealing with organic substances, such as meat, they almost invariably, either at first or at some stage of the process, subjected the meat or organic substance to a degree of heat sufficient to kill the bacteria or ferments pre-existing in the meat?

A. On the contrary, my recollection on this subject is that both these authors have most emphatically denied the existence of bacteria or ferments of like character in healthy living tissues. One of Pasteur's experiments, which I recall at this moment, which is very conclusive, was conducted in the following manner: A small glass flask was provided with two necks, one being extended in a long narrow tube and the other shorter, terminated in a point. A little water was introduced in this flask, and while this was actively boiling the ends of both tubes were sealed, leaving, when the flask cooled, a vacuum within. The short neck was then thrust into a vein of a living animal and broken, so as to allow blood to flow into the flask. The extreme end of the long neck was then opened, so that air could flow in and completely relieve the vacuum. (It had been proved beforehand that air flowing through such a long
201 fine tube would not carry any germs with it.) The short neck was then removed from the wound and instantly sealed with a flame. Under these conditions there was no putrefaction or formation of bacteria, though the blood thus collected was kept at an appropriate temperature for the development of such changes for nearly a year.

C. Q. 129. Whatever be the origin or source of these bacteria germs, spores, or ferments in fat or other organic substance, is it not a fact that they are killed by heat at a high temperature, but that at a low temperature—for example, at the freezing point—they are only numbed, and upon the recurrence of warmth spring into renewed activity, and that meats once frozen are even less easily preserved than meats that have never been frozen?

A. That is correct.

C. Q. 130. You have stated that in the living animal the fatty globules enclosed within the cellular tissue were in a liquid state at the animal temperature. Does this heat at the animal temperature in the living animal work any destruction in the cellular tissue?

A. It does not.

C. Q. 131. You have stated that these fatty globules are so exceedingly minute that they are not visible to the naked eye. Such being the case, when the ordinary hasher is employed to hash the fat a number of these microscopic globules and their enclosing cells would ordinarily pass through the hasher in practical operation without being crushed by the knives, and there would also be strings of connective tissue passing through, would there not?

A. There would undoubtedly be a good many fat globules whose cells would escape rupture, and likewise portions of connective tissue, though it is my impression that the strings to which you allude are the result of a felting and twisting together of minute shreds of torn and disintegrated connective tissue.

C. Q. 132. You were asked on the direct examination touching the comparative condition of fat in a living animal and molten rendered fat. Is it not obvious that there is a radical distinction between the two states of fat; that while both the fatty globules are uncongealed, or, as you term it, "liquid," in the scientific
202 sense, in the living animal, is not each minute fatty globule separated from its fellows and imprisoned within a cell composed of tissue, while in liquid fat, which has been rendered, the fatty globules are in contact with each other, in the ordinary acceptation of the word, and are freed from tissue; and is it not the very problem of rendering to effect the rupture of these cells or their decomposition so that the fatty globules can flow together, either by the application of heat, which perhaps expands the globules and contracts the cell tissue, or by some means effects its disruption, or by acid or other chemical agents which act not upon the globules, but upon the tissue enclosing them? And the special problem in the case we are discussing is to effect the rupture or dissolution of the cell tissue and liberate the globules with the results as set forth in the patent.

A. Your statement is substantially correct, but it is to be noticed that the patent contemplates not only the liberation of each individual fat globule from its enclosing cell, but the aggregation of these liberated fat globules into a homogeneous mass of greasy substance, separate from the remnants of the enclosing cells, which, for their part, are also to be collected together by subsidence or settling. Complete rendering involves, therefore, as I think, not only the idea of liberating the globule from its cell, but also that of separating the mass of greasy substance from the mass of animal tissue. The first of these actions would be accomplished when the entire mass was reduced to a fluid emulsion, "like chyme" in the stomach, by purely digestive action, but a further treatment of some sort would be required to effect the latter change or result.

C. Q. 133. I will ask you how many degrees of temperature above the melting point of any raw fat is necessary to render it completely molten, and to enable you to make a definite answer I will specify the case where the raw fat is "cut into small pieces," and the fat is so completely molten that none of these pieces are left incompletely melted.

A. To effect this result the fat must be heated to a temperature approaching that of boiling water. Very little, if any, difference in this temperature will be found with different fats, because the
203 result does not depend upon the fusion of the fat proper, but upon the destruction of the membranous envelope, which requires a temperature far above the melting point of the fat in all cases.

C. Q. 134. I will ask you that if clean, pure raw fat or suet be crushed and then melted and the tissue separated, at how many degrees above the melting point of the particular fat used must the melting be conducted to secure, upon a practical industrial scale as a product, a fat free from the fatty taste, and also free from disagreeable odor or flavor?

A. If the crushing by very thorough, or other means be used to break up and separate the tissue, and the water is taken out by the use of salt, I think a product such as you describe might be produced at a temperature 10° or 12° above the melting point of the fat in question.

C. Q. 135. What means do you refer to by the words "or other means be used to break up or separate the tissue?"

A. The employment of gastric juice alone, or, with some acid or acid salt, the use of sulphuric acid or of the strong alkali. In the case, however, when sulphuric acid or a strong alkali was used a disagreeable taste or odor would undoubtedly be presented in the rendered fat.

C. Q. 136. The terms of my previous question were "at how many degrees above the melting point of the particular fat used must the melting be conducted to secure upon a practical industrial scale" the product described. Your answer was that it "might be produced at a temperature 10° or 12° above the melting point of the fat in question." Omitting reference to the alternative means you mention, such as gastric juice, acid, etc., is your answer that a higher temperature of 10° or 12° above the melting point must be used, according to the terms of my question?

A. I think 10° or 12° is the very least additional temperature which would effect the result by the action of heat alone, but, of course, a considerably higher temperature might be used with improved effects as to the rapidity and consequent economy of the process. In other words, if by mechanical or other means the fat-enclosing cells are completely broken up, then a practical rendering or separation of the greasy matter in mass might be
204 effected by a temperature only 10° or 12° above what I understand to be the melting point of the fatty contents of the cells; but if this thorough breaking up or disintegration of the cells is not accomplished by mechanical or other means, as would be the case where the fat was simply cut into small pieces, then such rendering could only be accomplished at a temperature approaching that of boiling water or higher.

C. Q. 137. Regarding the melting point of beef fat, I will read you the following passage from Watt's Dictionary of Chemistry, vol. V, p. 464, article "Suet:"

"Suet. The solid fat of the ox or sheep. Mutton suet is more solid than beef suet and consists mainly of stearine, together with palmatin and small quantities of oleine and hircin; melts at 50° C. (122° Fahr)."

Also the following passage from the book entitled "The Art of Manufacturing Soap and Candles," by Adolph Ott, Ph. D., Philadelphia, 1867, p. 66:

"Beef tallow. Of all animal fats this is the most used. Its general characteristics are well known. It has a yellowish tint due to a peculiar coloring matter separable by several washings in hot water, and is firm, brittle, but not so white as mutton suet. That rendered by steam, as is now universally done in France, is generally the whitest. The melting point of beef tallow we found to be as high as 111° Fahr., and it can be cooled down to 102° Fahr., before it becomes solid again."

Are you acquainted, Professor, with the books above mentioned, and were they published prior to 1869, and are you in substantial accord with the statements above quoted in their general range of expression as to the melting points of the facts mentioned?

A. I am acquainted with them, and they were published prior to that date. I am in substantial accord. The melting points of fats as given by different authors vary through a wide range. Which of them are correct or whether they may be all correct for special cases I cannot say.

205 C. Q. 138. Which requires the higher temperature to melt them—beef fat, called suet, mutton suet, and hog's fat—considering them relatively to each other?

A. Mutton fat is the least fusible or has the highest fusible point. Beef fat comes next, and hog's fat is the most fusible or has the lowest fusing point.

C. Q. 139. You have placed 10° or 12° as the very least additional temperature above the fusing point at which fat finely crushed could be melted and the tissue separated so that the product freed from the tissue would be free from the fatty taste and devoid of disagreeable odor or flavor. Please tell us now what will be the lowest degree of temperature at which the average beef fat or suet finely crushed could be rendered so as to produce as a product a fat free from the fatty taste and devoid of disagreeable odor or flavor upon a practical and a working or industrial scale.

A. I think for commercial or practical operation that the temperature of rendering should not be much below 120° at its final point or for its completion.

Adjourned to Tuesday, December 4, 1883, at 10 a. m.

Met pursuant to adjournment, December 4, 1883, at 10 a. m.

Present: Same as before.

C. Q. 140. Please explain the *rationale* of the manner in which heat, when used alone in rendering fat at a melting temperature, say, from 125° to 170°, effects the complete separation of the fatty globules from the tissue inclosing them.

A. The oily or greasy substance of fat when it enters into fusion

or melts does not pass abruptly from the solid to the liquid state, but changes gradually, becoming first a soft solid and then a thick liquid, which grows thinner and thinner as the temperature rises. If we have an emulsion or mixture of oily and aqueous fluids the separation of the two will be in the first place manifestly aided by anything increasing the limpidity of either of the two mingled bodies. At the temperatures which you have named the greasy matter of fat becomes quite limpid and by reason of this con-
206 dition more readily separates itself from the membranous matter mingled with it. At these temperatures also the membranous substance begins to be affected by the heat in such a way as to shrink its volume by the loss of water and also probably by some chemical change similar to the coagulation of albumen. By this means it is rendered specifically heavier than the oil, and thus tends to settle out from it. Lastly, it is probable that the oil is more dilated by heat than the membranous parts, and is thus made specifically lighter, and this change becomes appreciable and effective to a practical extent at the temperatures you mention. I should, however, suppose that the higher temperature mentioned by you would be high enough to develop a fatty flavor in the product, and therefore inadmissible in the manufacture of oleomargarine.

C. Q. 141. You have stated in substance that fat was composed of very small "fat globules," each separated from its fellows and imprisoned within a tiny and enclosing cell of animal tissue, which cells are bound together by connective tissue. The question I now ask you is, in the above case, what is the action of the heat upon this tissue which liberates the enclosed fat globules?

A. When the office of the heat is the liberation of the greasy substance from its enclosure in the fat cell and membranous tissue, and not simply the parting of an emulsion of already liberated greasy substance with membranous and aqueous matters, then the heat must effect, in the first place, the disruption or opening of these cells and tissues, and this, as I understand, it accomplishes by driving off their moisture and causing such profound change in their structure as will render them brittle or porous or both. Precisely what this change is in a chemical sense I do not know, but consider it to be closely connected with that which meat undergoes when properly cooked and which gives it a relative crispness as compared with the soft and elastic condition of raw meat. This action is aided, no doubt, by the expansion of the enclosed oil by the increased temperature.

C. Q. 142. As I understand you, the heat thus acts upon the cellular tissue enclosing the fat globules, causing it to shrink or shrivel and also to become brittle, and thus break up and
207 allow the escape of the enclosed fat globules, whose expansion meantime contributes to the same result?

A. This is the way in which the heat acts at a sufficient temperature.

C. Q. 143. And when the heat has thus effected the liberation of the fat globules from the enclosing tissue do they form a homogeneous "flowing" mass, and while in this liquid state, as I

understand you, does the difference in the specific gravity of the fat globules flowing together and the ruptured cellular tissue which before enclosed them cause the former to rise and the latter to sink to the bottom of the liquid mass?

A. Such is substantially the action, as I understand it.

C. Q. 144. When we consider that the artificial digestion of the fat is effected by the action of the gastric juice, which dissolves the animal tissue enclosing the fatty globules by some peculiar "ferment" action, thus freeing the fatty globules unimpaired, and that this gastric juice is only active at substantially the animal temperature, and that its solvent power is destroyed at a very little over 100°, or substantially above the animal temperature, and that also the gastric juice is dormant at a low temperature and becomes only active when the temperature is raised to that of animal heat, which appears to be a necessary condition to the action of the gastric juice, and when we consider, on the other hand, the process of rendering by that alone, without the use of gastric juice when applied to fats—such, for instance, as beef fat, from which oleomargarine is made—that the fusing point is above the animal temperature and that the process of rendering by heat must be conducted several degrees above the fusing point to secure a product devoid of disagreeable taste or odor in practical industrial operation, and that the heat at this and higher temperatures effects the separation of the fatty globules by expanding the globules in the cells and by rupturing the cell tissue enclosing the globules, while the two processes effect the same end and result, to wit, the separation of the fatty globules from the enclosing animal tissue, are they the same or are they different processes for effecting the common result?

208 A. In the first place, if by the two processes you mean, as your question implies, the artificial digestion of fatty food described by medical authors and the rendering of fats as described by works on the manufacture of soap and candles and the like, I should say that there was no result in common in the two, the only point of contact between them being the rupture or destruction of the fat-enclosing cells, which in our case, however, leaves the fat so liberated in the condition of an emulsion with all the other material present, while in the other case the liberated fat is separated from everything else and obtained as a pure and available product.

C. Q. 145. Are the two processes mentioned in my previous question the same, or different processes?

A. They are different processes.

C. Q. 146. Please point out the distinctions and points of difference between the two processes.

A. In the first place, as I understand your question, though you speak of only two processes, the statements of the question might be understood as involving three: First, the process of the physiologist; secondly, the process carried on by the complainant and defendant in the manufacture of oleomargarine oil; and, thirdly, the old processes employed in rendering fats at temperatures approaching that of boiling water. These three processes I consider to differ

from each other entirely—in the first place, as to the object in view; in the second place, as to the mode of attaining that object; and, in the third place, as to the product produced.

I. Thus, in the first place, the object of the process described by the physiologists in the production from some animal fat of a material as nearly as possible resembling the chyme or digested food of similar character found in the the stomach of an animal at the period when what is known as gastric digestion, or that effected in the stomach proper by the action of gastric juice, is complete. In the process as carried on for the manufacture of oleomargarine oil, on the other hand, the object in the production of a pure fat, completely separated from all tissue or products of the decomposition of tissue, and from any taste or odor which might be derived from said tissue or its products in any way. Yet, again, the object of the fat rendered according to the old process was to obtain
209 a clear rendered fat or tallow, free from all animal tissue or product of its decomposition, and also from any trace of water or aqueous fluid of any sort. It was also desirable to avoid any empyreumatic taste or odor such as would be produced by a scorching or partial decomposition by heat of the fat itself or associated tissues; but an entire freedom from such odors and tastes as fat requires when rendered at temperatures above that of boiling water was not considered or aimed at.

II. Considering next the means employed in either case, the physiologists relied exclusively upon the peculiar power possessed by the substance pepsin, by virtue of which it caused the destruction or breaking up of animal tissues under appropriate conditions of temperature and the presence of very dilute hydrochloric acid. And he employed a large excess of this pepsin and hydrochloric acid so as to secure the full operation of this agency, limiting, moreover, the temperature to that narrow range within which this action was most effective. On the other hand, the manufacturer of oleomargarine oil, to obtain his desired result, relies essentially on two agencies not contemplated by the physiologist, viz., extremely minute mechanical subdivision of the raw fat and a temperature sufficiently elevated to secure not only the fluidity of the individual fat globules, but also their complete separation from the tissue or any products of its alteration and its aggregation into a continuous mass of pure fluid fat. In applying these agencies, as above indicated, the manufacturer of oleomargarine oil is careful, in the first place, to secure a very thorough pulverization of the raw fat, and to avoid, as far as possible, the introduction into it or the continuance with it of any aqueous fluid. This he accomplishes by draining the raw fat after it is washed and by the addition of salt during the melting.

In the next place he employs a temperature sufficiently high to effect the separation of the fat and tissue with the necessary rapidity, while at the same time avoiding such a temperature as would develop an objectionable taste or odor. Yet, again, the fat renderer by the old process relied chiefly on the agency of heat alone, and employed such a temperature as would shrink and shrivel the tissue

of the fat cells, thereby not only causing them to expel the
210 contained fat, but also become dense, and then to settle out and separate from the melted fat. Water was also in this case expelled as vapor from the material treated, and any albuminous or like aqueous fluids were coagulated and dried by the same means.

III. Considering next the products obtained, that secured by the physiologist was manifestly a more or less perfect emulsion resembling milk or cream, the fat on which would undoubtedly have possessed an offensive taste and odor derived from the decomposing organic matter, by which I do not mean putrefying, but simply decomposing into peptones, etc., with which it had been for a long time in contact. On the other hand, the manufacturer of oleomargarine oil obtains as his product a clear homogeneous, essentially tasteless and odorless melted fat, separated and entirely free from tissue or products of decomposition or change of tissue, and essentially free from water, though not as absolutely anhydrous as would be fat subjected to a much higher temperature. Lastly, the ordinary fat renderer obtains as his product a clear melted fat, completely deprived of water, and thoroughly separated from all membrane or products of its decomposition, but possessing such a taste and odor as fat acquires when rendered at a temperature approaching that of boiling water.

C. Q. 147. You say, "On the other hand, the manufacturer of oleomargarine oil obtains as his product a clear homogeneous, essentially tasteless and odorless melted fat, separated and entirely free from tissue or products of decomposition or change of tissue, and essentially free from water, though not as absolutely anhydrous as would be fat subjected to a much higher temperature." The present patent is a reissue in the series of reissue 5868, dated May 12, 1874, in which Mége states: "The oleomargarine thus produced is free from any disagreeable taste or odor, and is suitable for various culinary uses, and also for placing olive oil in the manufacture of soaps, and as a superior lubricator, etc. It is composed, like butter, of oleine, margarine, and a little odoriferous oil." Please explain the presence of this odoriferous oil in what you have termed an essentially odorless fat.

A. In the first place, the product to which I have above
211 referred is the product described and claimed in the patent involved in the present suit, and I therefore do not see that the properties described in another patent, even though it should have some connection in a series of reissues, has of necessity any relation to the first one. If I had the patent in question before me I should perhaps be able to explain what is meant by the language you have quoted from it.

C. Q. 148. Here is the patent.

A. On examining this patent I observe one conspicuous difference in the treatment then set forth in this, that the crystallization of the stearine is omitted, the entire greasy substance being allowed to solidify, and the oleomargarine is thus melted out of the application of a heat of 80° in the press or centrifugal machine. As I am informed and believe, fat treated in this way always acquires a pecu-

liar odor, which would be accounted for by the presence in it of a little odoriferous oil.

C. Q. 149. You say you are "informed." Are you also informed as to what this odoriferous oil consists of, and as to how it gets into the fat after the membrane has been separated, and when the only thing thereafter removed is the stearine?

A. I am not informed as to the source of that which causes the effect mentioned, and, of course, still less am I informed as to the composition of the unknown cause of the phenomenon referred to.

C. Q. 150. You say the manufacturer of oleomargarine oil employs "a temperature sufficiently elevated to secure not only the fluidity of the individual fat globules, but also their complete separation from the tissue or any products of its alteration, and its aggregation into a continuous mass of pure fluid fat." Does not Mége state in the present patent, in describing his "concentrated digestion," that "the organized tissues which do deposit are unaltered," and when this digestion is conducted at a temperature of 103°, so that the gastric juice dissolves the cellular tissue into chemical particles of peptones and para-peptones, will not some of these particles remain in the solution or emulsion produced by the artificial digestion, while it remains an emulsion?

A. Not if the process is carried out in the manner indi-
212 cated by Mége in the patent referred to. In that patent, as I have already pointed out, there are described, under the heading "concentrated digestion," two distinct steps, one being the digestion of the tissues and the other the separation of the liberated fatty matter. But while these are described as separate and successive they are also shown to be continuous or following one immediately upon the other; and under these conditions I do not think that in view of the relatively small amount of artificial gastric juice present the fat would acquire any flavor from the products produced by the action of this gastric juice under the conditions present. It must be remembered that a perfect digestion of the tissues is not required, but only such an attack upon the most delicate portions of them, namely, the individual fat cells, as will liberate their contents.

C. Q. 151. Regardless of the question of what flavor or flavors might be produced by the action of the gastric juice, do you mean to say that while the solution produced by the gastric juice remains an emulsion at a temperature of 103°, it would contain none of the minute particles of the peptones and para-peptones created by the action of the gastric juice?

A. I do not. On the contrary, I believe that during this brief interval small quantities of these bodies would be present.

C. Q. 152. When raw fat is subjected to artificial digestion under the proper conditions, and the gastric juice effects the separation of the fatty globules by its action upon the tissue, please point out, though it be merely repetition, the difference in the mode of the action of the gastric juice upon the cellular tissue in such case, and the mode of the action of heat upon the fat at a temperature of 120° to 125° Fahrenheit.

A. The gastric juice causes the cellular tissue to break up into

peptones, etc., which become dissolved in the dilute acid. The heat causes a change in the tissue of some sort, which has never been studied as far as I am aware, which does not render it soluble, but appears to diminish its elasticity and tenacity, and thus favors the escape of the included fat.

C. Q. 153. Have you ever analyzed butter so as to determine for yourself its constituents?

213 A. I have made a number of butter analyses in which I have determined the water, salt, caseine, and butterine, but I have never attempted to separate the stearine, margarine, and oleine so as to determine their relative proportions, though I have determined the total amount of the three present in the samples analyzed.

C. Q. 154. Which of these four ingredients is the most characteristic of butter in the sense that it tends most to impart to it what is known as the peculiar characteristic butter flavor?

A. Butyrine.

C. Q. 155. Is butyrine found in any other fat but butter?

A. In none other that I know of.

C. Q. 156. Then in that respect butter in quantitative and qualitative analysis differs from the animal fats?

A. It does; both in quantitative and qualitative analysis.

C. Q. 157. You stated in your direct examination substantially that oleomargarine oil contained no butyrine. Have you ever analyzed samples of oleomargarine oil with a view of determining its constituents?

A. I have not.

C. Q. 158. What process did you pursue in your analysis of butter to determine, for example, the presence and amount of butyrine in it?

A. I took a weighted sample and carefully dried it; then melted it in water so as to remove the salt; then filtered it hot so as to get the caseine; then saponified it with an alcoholic solution of caustic soda; then decomposed the soap so formed with sulphuric acid; then very thoroughly washed the insoluble fatty acids so obtained with hot water, and at this stage of the process the butyric acid was readily recognized by its smell; then dried the insoluble fatty acids and weighed them. From the weight of these fat acids I calculated the weight of the corresponding fats, and, subtracting this from the weight of the total pure fats, I found the weight of the butyrine which had been removed as free butyric acid and glycerine in the washing of the acids.

C. Q. 159. Did you obtain the butyric acid separate and apart from any other constituents of the butter?

214 A. I did not. It was mixed with the entire glycerine of the fats and the water used in washing.

C. Q. 160. To the extent you carried the process, what authority, if any, did you follow?

A. I carried the process beyond what was given by any authority at that time, but I adopted the general suggestions contained in a little book or pamphlet, by Messrs. Angel and Hehner, entitled "Butter—its Analysis and Adulterations." London, 1874.

C. Q. 161. Does Mége, in his patent, say anything about the "margarine" or oleomargarine oil produced in the completed five steps of the process having the homogeneousness or consistency of natural butter, and, on the other hand, does he not state that after it has been treated with mammary pepsin, as set forth in paragraph VI, he coarsely scraped it and passed it between two large cylinders, which gave it the homogeneousness and the consistence which are the qualities of the natural butter?

A. Mége, in his patent, compares his margarine with melted butter, with which it would be substantially identical while melted, both in composition as regards its main constituents and consistency, and when it was cooled and solidified it would be likewise identical with melted natural butter cooled and solidified in the same way. To give it the peculiar characteristics of unmelted butter, some process by which it should be converted into a similar solid emulsion would need to be applied to the margarine or to natural butter which had been melted, and such a treatment I understand Mége to contemplate in the scraping and grinding after mixing with mammary pepsin, etc.

C. Q. 162. Have you not mistaken the drift of Mége's statement in that the only comparison made by him with melted butter is upon the single point of "taste?" "It must, on the contrary, have the taste of molten butter," and is not this statement made with reference not to the "margarine" or oleomargarine oil, but with reference to the greasy matter mentioned in step III, before the stearine had been crystallized or pressed therefrom, when it would obviously not have the consistency of butter?

215 A. I refer especially to the passage near the end of section V, where Mége describes the oleomargarine as "constituting, especially if its yellow color has been raised, a greasy matter of very good taste, and which may replace the butter in the kitchen."

This statement, taken in connection with the previous reference to melted butter, and also in view of the manifest fact that the material here treated of had been melted, and was therefore only comparable with butter which had also been melted, supports, as I think, my view that it was with melted butter or with butter which had been melted, and not with unmelted butter, that Mége suggests a comparison, when speaking of his product as developed at the end of division V of his specification.

C. Q. 163. Which substance does Mége state in the words of his specification has the taste of molten butter, the "greasy matter" referred to at the end of paragraph V or the substance referred to in paragraph III, which contained the stearine?

A. The substance containing the stearine; but as he subsequently refers to the same substance unchanged, except by the removal of the stearine, as "of very good taste" and fit to "replace the butter in the kitchen," I think it is manifest that this butter taste was assumed to exist in the melted butter as in the former material.

C. Q. 164. Does the article commercially known to the trade as oleomargarine oil contain granulations or an appearance which is sometimes termed a "grain?"

A. It does.

C. Q. 165. Please describe this "grain" or granular state.

A. It is hard to describe it more completely than by saying that it is granular or made up of minute separate particles of a somewhat harder substance imbedded in a somewhat softer one; it is, in fact, exactly in the same condition as the butter which long ago was melted and allowed to solidify in the vessel or package in which it was kept in order to secure its keeping for a long time.

C. Q. 166. Does natural butter, as it is sold in the market, contain this "grain" or is it homogeneous in its character?

216 A. It does not contain any "grain," but cannot be strictly called homogeneous, being in fact a solid emulsion of greasy particles separated from each other by portions of an aqueous fluid.

C. Q. 167. In this respect does it differ from what is termed oleomargarine oil?

A. It does.

C. Q. 168. If what is commercially known as oleomargarine oil be kept for some time, either exposed to the air or enclosed from the air in a glass vessel, will it preserve its original character without undergoing any change?

A. If exposed to the air it will undoubtedly undergo considerable change, but if sealed up air-tight and not exposed to light it might be successfully preserved. I have, however, no experience which would enable me to say positively what could be accomplished in this direction.

C. Q. 169. What changes would take place when it is exposed either to the light or the air?

A. Exposure to light bleaches it and exposure to air, especially with the action of light, causes it to acquire a strong, tallowy flavor; exactly the same conditions hold good in reference to butter, except that butter would more quickly and readily undergo change.

C. Q. 170. You were requested by counsel for the complainant to add the last sentence relating to butter to your answer or requested by him to add to your answer how it was with butter?

A. Your second statement is correct.

C. Q. 171. Is it not well understood that the deterioration of good butter is towards "rancidity?"

A. That is part of it; but if the deterioration goes a little further the butter becomes indistinguishable in appearance and odor from common tallow.

C. Q. 172. Have you had any experience with oleomargarine oil when exposed to light or air?

A. I have, to a limited extent, having preserved some specimens in wide-mouthed bottles, stopped with corks, for about a month, when they all acquired the characteristics of tallow, as did also specimens of very fine butter, similarly enclosed, standing on the same shelf.

Adjourned to Dec. 5, 1883, at 10 a. m.

217 Met, pursuant to adjournment, Dec. 5, 1883, at 10 a. m.
Present: Same as before.
Adjourned to Dec. 5, 1883, at 2 p. m.

Met pursuant to adjournment.
Present: Same as before.

C. Q. 173. You stated, in answer to direct question 21, that "in the process of defendants the operation of rendering is performed in a vessel surrounded by a hot-water jacket, at a temperature at or about 120°, without the addition of the artificial gastric juice, and I regard this slight increase of temperature as the obvious equivalent for the gastric juice which was omitted." Was this a known equivalent before Mége made his invention? In other words, was it then known that a rendering of fat by heat alone, at a temperature of 120°, or ranging from 120° to 130°, would produce a like result with the process of artificial digestion in which gastric juice was employed or the results set forth in the patent?

A. Your present question reminds me that in the particular answer quoted I had inadvertently omitted what I had, however, fully stated in other parallel cases in this testimony, that an increase of temperature and also a more perfect comminution of the fats were, separately or together, equivalents for the use of gastric juice in the rendering of fats. Making this correction, I would then further say that, as I understand it, an increase in temperature was, in a general sense, the known equivalent for the action of gastric juice in liberating the greasy matter of fats from its membranous envelopes. Both bring about this result by the weakening or destruction of said membranous envelope, the gastric juice effecting this by a ferment action and the heat by a cooking process, both operations however, occasioning a breaking down or rupture of the cell walls, by which the contents of the cells are allowed to escape.

C. Q. 174. Question repeated.

218 A. Before the invention of Mége I do not believe that it was known that such a result as is set forth in his patent could be produced by any means, and therefore, of course, nothing was known as to the equivalency of one or another means by which this specific result could be obtained. I believe, however, that prior to Mége the actions of heat and of gastric juice in liberating the greasy matter of fats from its enclosing cells were known, and known to be substantially equivalent in the manner pointed out in my previous answer, and that, consequently, when it was shown that the results set forth by Mége could be obtained by one of these agencies it became manifest that they could be secured by the other, especially with the assistance of a very perfect comminution of the fat.

C. Q. 175. Please state what was then known as to the effect produced by rendering fat at a comparatively low temperature; for example, at a temperature ranging from 120° to 130°.

A. Nothing whatever.

C. Q. 176. Speaking of different processes, take, for example, the old process for rendering of D'Arcet, with which you are doubtless

familiar, which consists, briefly, in heating raw fat, water, and sulphuric acid "in a close vessel under a pressure of 100 lbs. to the square inch," which would involve a temperature somewhere between 300° and 350° F. When you consider the difference in the results produced between that process and the process of artificial digestion with gastric juice, would you pronounce the two "equivalents" in the sense that they produce the like results, although in common they effected a liberation of the fat globules?

A. By no means. The process D'Arcet produced a strong-smelling tallow, while the process of gastric digestion set forth by Mége, to which I presume you allude, produced a butter-like oil. Consequently, in reference to the products produced, the processes are substantially different. It is, however, nevertheless true that as far as their general action is concerned they are substantially alike, in that each liberates the greasy substance from the enclosing membrane by a destruction and solution of the latter.

C. Q. 177. You have spoken of the cow in its physiological
219 action adding to milk in the process of its development "certain highly flavored fats, such as butyrine." What do you know or have you read anything which would tend to throw any light upon the question how this butyrine is involved or produced from the food in the animal?

A. What I have read in works on physiology would show this, in the first place, that the butyrine is found nowhere except in the milk, which is a secretion of the mammary gland, and that, therefore, its formation takes place simply and solely in this mammary gland. My reading in works on physiology has also shown me that secretions generally are products of a peculiar action of their respective glands by which various and different products are built up in each case out of the blood, which is a common nutriment, or rather material, from which the various glands construct their several secretions by a specific process of development, and not by any mere process of filtration or separation, the blood simply supplying the elements from which the gland, by its specific vital power, constructs the secretion.

C. Q. 178. You have used the word butyrine in the above answer as confined to its strict technical chemical meaning—*i. e.*, the butyric glyceride—have you not?

A. I have used it in the only sense it has, this word being the name for the well-known characteristic fat of butter, and for nothing else whatever.

C. Q. 179. What is butyryl?

A. The hypothetical radical of butyrine or of any other compound which may contain it.

C. Q. 180. Please state some of the compounds which contain it.

A. Butyric alcohol, butyric ether, butyric acid, butyric of soda, of potash, and of any number of bases with which it may be combined. By referring to a chemical dictionary I could give you a list of some hundred or more names indicating substances in which the radical butyryl is present.

C. Q. 181. By "radical" do you mean the particular association

of ultimate elements, such as oxygen, hydrogen, etc., which is found in common in a class of organic compounds, such as the butyric class, and which enters into each of the butyric compounds,
220 combined in each instance with other elements, as one or the other of these compounds are formed, but existing as a root of them all?

A. Your description of a radical is entirely correct as far as it goes, but I should add that a radical never has an independent existence of its own or can exist by itself.

C. Q. 182. So that at one time the butyric radical is found combined with other atoms, such as hydrogen, etc., in the form of butyric acid, and at another time with other atoms or combinations of atoms, such as glyceryl, in the form of butyrine, etc.?

A. It would more accurately express the conditions to say that one molecule of butyryl combined with certain atoms of oxygen and hydrogen would constitute butyric acid, and that three molecules of butyryl combined with one molecule of glyceryl (which is the radical of glycerine) constitutes the substance known as butyrine.

C. Q. 183. You stated in answer to cross-question 158, relating to your analysis of butter for butyrine, that after certain steps "the butyric acid was readily recognized by its smell," and at the close that "I found the weight of the butyrine which had been removed as free butyric acid and glycerine in the washing of the acids." Do you know or have you read anything which would tend to throw any light upon the question as to whether butyric acid or "butyryl," or, in untechnical language, the butyric element, is involved or produced in the animal from its food or any of the "ferment" or other processes through which the food passes in the animal organism?

A. In the first place, I see no possible connection between the passage quoted from my previous answer and the rest of your question, unless you have totally misunderstood the passage quoted. To correct such a possible source of error, I will explain more fully the operation alluded to in the passage quoted. When the butter is treated with caustic soda the various fats of which it consists—which are, all of them, glycerides—are transformed into their respective acids and glycerine by the addition to their several glyceryl and other radicals of the necessary atoms of oxygen and hydrogen to the glyceryl and of sodium to the other radicals. Among these in particular the butyryl combines with sodium, forming a sodium butyrate, the corresponding amount of glyceryl
221 being at the same time changed into glycerine. When to this mixture sulphuric acid is added, said acid removes the sodium from the sodium butyrate, replacing it with hydrogen, and thus causes the formation of butyric acid, which being a soluble substance, unlike the corresponding acids formed from the other fats (stearine, margarine, and oleine), is carried away in the subsequent washing, together with the glycerine. The determination of the amount of butyrine in the butter is therefore made, not by getting it out as such, but by destroying and removing it as butyric acid

and glycerine, these being the products of its decomposition, and by calculating the amount originally present from the loss of weight due to this removal. Such a process as this, consisting in the breaking up or destruction of butyrine by such powerful chemical agents as caustic soda and sulphuric acid, can manifestly have nothing to do with the production of butyrine in the mammary glands of a cow, and I do not see that I can add anything to what I have already said as to the phsiological relations of this process. Finally, I should remark that the use of the word butyric element to describe butyric acid and butyryl is not only untechnical, but incorrect, for while untechnically it would be correct enough to call butyryl the butyric element, such a term would be entirely inadmissible for butyric acid.

C. Q. 184. Question repeated.

A. I see that from the length and confusion of the question I was led to overlook the mention in it of the butyric acid. As far as my reading goes, it leads me to believe that butyric acid is either introduced into the system in a free state or combined in the food, in which latter case it may be separated from its state of combination, as it is commonly phrased, or developed from such compounds during the digestion of such food, or butyric acid may possibly be involved or produced as such in certain glands, such as those which secrete sweat.

C. Q. 185. You have stated that you followed the authority of the book entitled "Butter—its Analysis and Adulterations," by Messrs. Angel and Helmer. I will read you the following brief extracts from page 3: "Butyric acid belongs to the series of fatty acids, although it resembles in appearance and physical properties
222 acetic more than the palmetic stearic or deic. Its specific gravity is 0.97, boiling at 157° C. It smells strongly acid, like acetic acid and rancid butter combined. It is volatile and soluble in water, alcohol, and ether in all proportions. Butyric acid has also been found in large quantities in the locust bean (*siliqua dulcis*), in the fruits of the soap tree, and of *giuke biloba* in sour gherkins, and in the sour-kraut of the Germans. It occurs, further, in small quantities in some mineral springs, and is formed by the fermentation of sugar, starch, and lactic acid, in which way it is artificially prepared. It is found in no other fat but butter."

Also the following passage from Fowne's Manual of Chemistry, previously cited by you and edited by Henry Watts, B. A., F. R. S., London, J. & A. Churchill, 1877, vol. II, page 290: "Butyric acid, C4, H8, O2, C^3, H^1, CO2, H—of this acid there are two modifications, viz:

C H2. C H2. C H3.	C H (C H3)2.
1.	1.
C. O. O. H.	C. O. O. H.
Normal butyric.	Isobutyric.

Normal butyric acid, also called fermentation butyric, propylformic and ethylacetic acid, occurs either free or combined with bases in tamarinds and a few other plants, in certain beetles, in flesh juice,

in human perspiration, and in various kinds of decomposing vegetables and animal matter. As a glyceride it occurs in various animal and vegetable fats, especially in the butter of cows' and goats' milk."

Also the following passage from the book entitled "A Manual of Elementary Chemistry," by George Fownes, F. R. S., 10th edition, London, John C. Churchill & Sons, 1868; article or sub-head butyric acid, C4, H9, NO 2, or C4, H7, (NH 2) O2, is said to exist, together with its homologue, lencine, or amido caproic acid in the pancreas of the ox.

Also the following passage from the book entitled "A Text Book of Physiology," by M. Foster, M. A., M. D., F. R. S., London, MacMillan & Co., 1878, whom you have cited as an authority: "Butyric acid, C4, H7, O, OH, an oily, colorless liquid with an odor of rancid butter, soluble in water, alcohol, and ether, boiling at 162° C. 223 Calcium chloride separates it from its aqueous solution. Found in sweat, the contents of the large intestine, fæces, and in urine. It occurs in traces in many other fluids, and is plentifully obtained when diabetic urine is mixed with powdered chalk and kept at a temperature of 35° C. (95° Fahrenheit). It exists as a neutral fat in small quantities of milk."

Also the following passage from the book entitled "Principles of Organic and Physiological Chemistry," by Dr. Carl Lowig, Philadelphia, 1853, page 148:

"Butyryl—Occurrence and production.

"Butyryl is found as butyric acid in the fruit of *ceratonia siliqua*, in the old fruit of *sapindus saponariæ*, in *tamarindus indica*, often free in gastric juice, and in combination with oxide of glycyl in butter. It is produced by the fermentation of butyric acid, which always precedes the lactic acid fermentation, by dry distillation of tobacco," etc.

Also the following passage from the book entitled "Physiological Chemistry," by Prof. C. G. Lehmann, Philadelphia, Blanchard & Lea, 1855, vol. I, page 457: "He (Gruenewaldt) proves by experiments, which are fully described in his thesis, that the acid which is liberated (from gastric juice) on the application of heat consists of much butyric acid, with a little metacetonic and probably acetic acid, and that the human gastric juice contains no free hydrochloric acid. He regards the butyric and lactic acids as products of the metamorphosis of the carbo-hydrates, and, finally, he is persuaded that the acid reaction of the gastric juice, when mixed with food, owes its origin to the organic acids which are contained in or developed from that food."

Also, on page 188, speaking of gastric juice, Foster says as follows: "The reaction is distinctly acid, and the acidity is normally due to free hydrochloric acid. This is proved by the fact that the amount of hydrochloric acid is more than can be neutralized by the bases, and this excess corresponds to the quantity of free acid present. Lactic and butyric and other acids, when present, are secondary products arising either by their respective fermentation from

articles of food or from decomposition of their alkaline or
224 other salts. In man the amount of free hydro chloric acid
in juice having the above specific gravity was found to be
.02 per cent."

Do not these authorities indicate that butyric acid has been found in connection with the action of gastric juice upon food either in the gastric justice itself or as a secondary product arising from a fermentation taking place during digestion?

A. In the first place I have not said that I followed the authority of Messrs. Angel and Hehner, but, on the contrary, state that I accepted a suggestion from them which I worked out for myself. In the second place, as to your authorities, some of them are entirely absolute, such as Lehmann, Rulenewaldt, and Grunenwaldt, and their statement that gastric juice contains free butyric acid and does not contain free hydrochloric has long been known to be entirely untrue; that butyric acid is found in the stomach as the result of decomposition of articles of food, containing it in a free or combined state, I have already stated and agree with those of your authorities such as Foster, who so stated. Foster's words are as follows: "Lactic and butyric and other acids, *when present*, are secondary products, arising either by their respective fermentations from articles of food or from decomposition of their alkaline or other salts." (The italics are mine.) This clearly shows that they are not always present, and when present are introduced through the food either in a free state, as when one eats sour-kraut, Roquefort cheese, or sour milk, or are developed by their respective fermentations, as would be the case if one had eaten sugar, and also some of the riper varieties of cheese, when the cheese would act as a ferment and develop butyric acid from the sugar.

C. Q. 186. The older of the works cited, and all except Foster and Angel, had been published prior to the time that Mége made his physiological investigation and his invention, had they not?

A. There are five authorities in all; the two absolute ones were long before Mége; Angel and Foster are since, and the remaining one, Fowne, is referred to in two editions, in neither of which does he say anything about butyric acid in connection with gastric juice;
but in one reference, which is to the addition of 1877, refers
225 to its presence in certain plants, flesh juice, and human
perspiration, and in decomposing animal and vegetable matter only, and in the second edition of 1868 refers to amido-butyric, a totally different substance, which he states is *said* to exist in the pancreas of the ox. (The italics are mine.)

HENRY MORTON.

Subscribed and sworn to before me this 12th day of December, 1883.

V. S. LILIE,
Notary Public, Kings Co.

Certificate filed in N. Y. county.

Adjourned to Dec. 6, 1883, at 10 o'clock a. m.

Met pursuant to adjournment on Dec. 6, 1883, at 10 a. m.
Present: Same as before.
Adjourned to 2 o'clock p. m.

Met pursuant to adjournment on Dec. 6, 1883, at 2 p. m.
Present: Same as before.
Adjourned to Dec. 7, 1883, at 10 o'clock a. m.

Met pursuant to adjournment on Dec. 7, 1883, at 10 a. m.
Present: Same as before.

And thereupon complainants call CHARLES F. CHANDLER as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories propounded by complainant's counsel:

Q. 1. What is your age, residence, and profession, and what professional positions have you held?

A. Age, forty-seven years; residence, New York city; profession, chemist. I am professor of chemistry in the academic de-
226 partment and in the School of Mines of Columbia College, in the College of Physicians and Surgeons, and in the New York College of Pharmacy, and have been for the last seventeen years connected with the health department of the city, at first as its chemist, but for the last ten years as its president, until June last.

Q. 2. What opportunities have you had for the study of chemistry and physics in connection with the practical application of the sciences to the industry of arts?

A. I was educated as a chemist at Harvard College and at the universities of Goettingen and Berlin, and attended the regular courses of lectures at the universities on general chemistry and upon the chemical arts. Since 1857 I have been engaged as an instructor of young men preparing to become professional chemists, and I have constantly had charge of chemical laboratories in which my students have been engaged in experimental study. It has been my duty to go over the whole field of theoretical and applied chemistry, and at the College of Physicians and Surgeons I am obliged to give a course of lectures annually on physics. For a dozen years or more I have had a special course of lectures on the chemical arts at the School of Mines. For many years I was editor of the "American Chemist," and I was the chemical editor of "Johnston's Encyclopædia." I have also been frequently called upon to make chemical investigations for manufacturers, and have frequently been consulted and given evidence in patent litigation.

Q. 3. State fully what experience you have had in the investigation of the preparation, properties, and constituents of fatty substances with a view to their utilization in the useful arts.

A. As I grew up in New Bedford the treatment of fatty bodies, especially whale and sperm oil, was the first chemical industry that I became familiar with, and this seemed to create a special interest in the chemistry of the fats. From my connection with the health

department of the city of New York it has been my special duty for the last dozen years or more to pay particular attention to the various establishments in the city which are devoted to the treatment of the fats, and which are consequently liable to send out offensive odors and annoy citizens. I was an expert in the famous
227 Tilghman litigation with regard to the fatty acids, and I have been personally familiar with the chemistry of oleomargarine ever since the first sample prepared in this country was manufactured in my laboratory.

Q. 4. Have you read and do you understand the reissued letters patent No. 10137, dated June 13, 1882, granted to Hippolyte Mége for an improvement in treating animal fats, said patent being a reissue of original letters patent to the said Mége No. 146,012, dated December 30, 1873?

A. I have read and I think I understand the said reissue of letters patent.

Q. 5. When and from what source did you hear of the discovery of Hippolyte Mége relating to the utilization of some of the constituents of animal fats as a substitute for the butter product of cream of milk?

A. I can't say distinctly when I first heard of Mége's work, but I remember that either late in 1872 or early in 1873 Alfred Paraf, a French chemist, who had brought a letter of introduction to me, came to my laboratory and exhibited an article of Mége in the Moniteur Scientifique relating to oleomargarine or the more perfect butter prepared from it. He requested permission from me to use the convenience of my laboratory for repeating the experiments of Mége and testing some theories of his own with regard to improvements in the process. His experiments were conducted under my observation in the laboratory, where he conducted his investigations until he established a company and erected a factory and laboratory of his own.

Q. 6. State whether and, if at all, to what extent you have investigated, by analysis or otherwise, oleomargarine or the more perfect butter thereof described in said patent.

A. I have frequently investigated oleomargarine and the more perfect butter thereof described in said patent both synthetically, by making or supervising the manufacture according to the specifications of the patent, and analytically, by examining and causing to be examined, under my direction, the products.

Q. 7. State fully what improvement having in view the utilization of fatty substances for food purposes is described in said let-
228 ters patent and recited and covered by the claims thereof.

A. The improvement consists, first, in the extraction from the adipose tissue of the animals of the greasy substance or fat in such a manner as to completely avoid the decomposition either of the fat, the membranous tissues, or any other substances which may be present. This results in the production of the pure fat of the animal, entirely free from all disagreeable materials which give the odor and taste to fats as previously extracted.

The second improvement consists in changing the consistency of

the natural fat by the removal of a portion of its stearine, thus rendering it more fusible and, consequently, softer, and giving it a consistency similar to that of dairy butter. The result of these two improvements in the treatment of fats is a product which possesses the consistency of butter, together with freedom from all fatty or tallowy flavor and odor, and possessing the taste of butter.

The third improvement involves the conversion of the abovementioned product, the oleomargarine, into a more perfect butter by a process of churning while in the liquid state with milk and some other materials.

Q. 8. Broadly considered, please state what was the discovery of Mége as to the utilization of some of the constituents of animal fat as a new material of food product or a substitution for natural or dairy butter.

A. By a course of inductive reasoning and experiment Mége discovered that there could be prepared from bovine fat a product possessing all the essential properties as an article of food of dairy butter, and he invented the process necessary to secure the economical production of this new product on a commercial scale. His discovery and invention constitute an era in the commercial history of bovine fat. This material which was formerly rendered into tallow and used chiefly for the manufacture of soap is now converted by Mége's processes into a palatable and wholesome article of food and used as a substitute for dairy butter.

Q. 9. You will see by the said Mége patent that it is divided into IX clauses or divisions or statements of processes. Will you
229 please designate such clauses as you find containing, expressing, or representing the three subdivisions of invention you have treated in answer to question 7, and, briefly, the manner in which the result of the invention is obtained?

A. Section I, entitled neutralization of the ferments; section II, entitled crushing, and section III, entitled concentrated digestion, constitute together what I consider the first invention of Mége. The application of these three operations to the raw bovine fat results in the extraction of the pure fat from the membranous tissues and other substances, and furnishes this fat entirely free from all fatty or tallowy odors and flavors. The first step, the neutralization of the ferments, is really a cleansing process, and has for its object the removal of blood and other soluble substances, and in addition to this involves the use of antiseptics to prevent the fermentation or decomposition of any of the substances associated naturally with the fat, which decomposition would result in impairing the quality of the fat by developing offensive odors and flavors. The second step, or the crushing, has for its object the liberating and rupturing of the individual cells or sacs which contain the fat, and which are associated in the natural adipose tissue with fibres, membranes, and blood-vessels by which the whole is held together in masses.

The third step, or concentrated digestion, consists really of two successive subordinate steps; the first consists in subjecting the partially disintegrated fat from the crushing operation to the action of an artificial gastric juice in order to complete the work of disinte-

grating the adipose tissue and of liberating the fat contained in the cells, which it does by actually dissolving the cell membranes. The elevated temperature at which the artificial digestion takes place maintains the fat in a liquid condition. The second subordinate step in the concentrated digestion consists in separating the greasy matter or molten fat from the water and the undissolved tissues. It is accomplished by raising the temperature to the necessary point and by the addition of salt. The result of these three steps is the complete separation of the fat from the tissues under such carefully devised conditions as to protect from every kind of decomposition or change which could impart odor or flavor. The result is
230 the fatty matter of the animal, pure and free from the ordinary taste of fat, and possessing the taste of molten butter. The second part of Mége's invention is embodied in section 4, entitled Crystallization in a Mass, and 5, entitled Separation by Centrifugal Force. Crystallization in a mass is based upon the fact that the pure bovine fat is a mixture of three simple fats, called by chemists stearine, palmatine, and oleine. The first two are solids at ordinary temperature, the last is a liquid when pure. The consistence of the bovine fat is due to the peculiar proportions in which the solid stearine and palmatine are associated with the liquid oleine. I should remark that among older authors the term margarine is used instead of palmatine; hence the use of the term margarine in the patent, oleomargarine being used to designate the mixture of oleine and margarine, or palmatine. The crystallization in a mass is accomplished by cooling the molten fat to a temperature for bovine fat of about 86° Fahrenheit. During this cooling a large part of the stearine crystallizes or granulates, while the oleine and margarine, together with some of the stearine, remains liquid. When this crystallization is completed the mass is ready for the fifth step of the specification, which consists in the separation by centrifugal force, with or without the use of a press, of the solid particles of stearine from the still liquid oleomargarine. This oleomargarine, as it cools down below the temperature of 86° or thereabouts, at which it is pressed, becomes solid, and constitutes the new butter fat which is intended to replace dairy butter. Three of the subsequent sections of the specifications have for their object the conversion of this oleomargarine or butter fat into a more perfect butter by mingling it with cream or some aqueous mixture, which converts into an emulsion, thus making its consistency still more like that of dairy butter and increasing the butter flavor. Yellow coloring matter is at the same time added, by which the product acquires a still closer resemblance to dairy butter.

Section 9 of the specification refers simply to the further treatment of the stearine.

Q. 10. You have stated already the principal constituents of animal fats. Will you now state what is their condition and
231 how contained in the living animal, and what change in their physical constitution occurs at the death of the animal?

A. In the living animal the fats are in a molten condition—that is, liquid—and they are contained in little sacs or cells, which are

clustered together between membranes and fibres and blood vessels, the whole constituting masses of what is called by the physiologists adipose tissue. On the death of the animal the temperature falls below blood heat and the fat passes from the liquid state to the solid state, still remaining in the little cells or sacs.

Q. 11. Prior to the discovery of Mége, what were the methods of rendering fatty substances for the various uses in the arts and for domestic purposes, which are known to you from the description contained in the literature relating to the subject, or of which you have otherwise any knowledge?

A. The processes in use prior to Mége's discovery and invention may be classed, first, under the head of the dry process, and, secondly, the wet process. This dry process consists in heating the adipose tissue in a kettle or any other convenient vessel. The heat was generally applied by free fire and the temperature was raised above 212°; as a result of this temperature the fat became liquid, the cells were ruptured, and the tissues were shriveled and shrunken. The small percentage of water in the adipose tissue is expelled by evaporation. The result of this process of rendering was a vessel of molten fat with a small quantity of brown cracklings or scraps. The molten fat was ladled out into convenient vessels and allowed to cool, when it constituted tallow, possessing the characteristic fatty and tallowy taste.

The wet processes involved the application of steam generally in closed vessels, under pressure, and resulted in disintegrating the tissues and rupturing the cells. When the fat was completely liberated the contents of the vessel consisted of two layers, the molten fat above, and below a mixture of water and disintegrated membranes and tissues; the fat was drawn off into suitable vessels and constituted, on cooling, beef tallow, with the characteristic odor and taste of this substance. Both of these processes, wet and dry, resulted in the production of offensive gases and vapors, due to
232 the decomposition of the membranes and other substances, and sometimes to a portion of the fat itself. To assist in the disintegration of the tissues, sulphuric acid was sometimes employed.

Q. 12. What effect has the employment of comparatively low and comparatively high temperatures in the rendering of animal fats upon the character and qualities of the contents of the membranous cells containing the homogeneous mixture of the constituents of the fat?

A. When the adipose tissue is rendered at a low temperature the process simply results in extracting the fat from the cells and tissue without any decomposition either of fat or tissue, and thus yields it in its pure, natural state. When, on the other hand, the rendering of adipose tissue takes place at high temperatures there is invariably more or less decomposition of the tissues or the fat, or both, which results in the development of substances which remain in the rendered product—that is, the fat—and give to it the peculiar tallowy taste and odor which characterize all animal fats except those rendered by the Mége process.

Q. 13. What is the importance in practicing the process described by the Mége reissue patent, of crushing, grinding, or disintegrating the fat preliminary to the process of rendering it by heat?

A. It is only by the thorough crushing, grinding, and disintegration of the fat—that is, the rupturing of the cells—that it becomes possible to separate the fat from the tissues at a temperature so low as to avoid the production of those substances which produce the peculiar tallow odor or taste.

Q. 14. What office or function is performed by gastric juice when employed as an agent to assist in rendering fatty substances?

A. The gastric juice simply supplements the mechanical crushing and disintegration of the tissues and cell membranes. It results in an actual solution or dissolving of the cell membranes and completes the liberation of their fatty contents.

Q. 15. State what, chemically considered, are the identities and differences between oleomargarine, or the butter product obtained from the rendering of animal fats by the process described in
233 the first five sections of the Mége patent, and also the more perfect butter of this patent, and the principal constituents of dairy butter made by the ordinary processes from cream of milk?

A. The oleomargarine, or the butter product which results from the applications of the processes described in the first five sections, consists of oleine, margarine (or palmatine), and some stearine. It is a pure fat. The dairy butter made from the cream of milk consists of an emulsion of butter fat and buttermilk—that is, it is a mixture of a fatty substance with a watery substance, this being what is understood as an emulsion. It is chiefly composed of the fat, the buttermilk being mostly worked out in the process of manufacture. The difference between the oleomargarine butter of the first five sections and the dairy butter consists, first, in a slight difference in the composition of the fat. While the fat of the dairy butter consists chiefly of the same simple fats—that is, oleine, margarine, and stearine—it also contains a very small percentage, say, five or six per cent., of other simple fats, chiefly the fat called butyrine. Secondly, the dairy butter contains the buttermilk in small quantity. This includes, besides water, a small amount of caseine, milk, sugar, and saline bodies.

The perfected butter prepared by churning the oleomargarine in a liquid state with cream or milk is absolutely identical with dairy butter—that is, it is an emulsion of fat with buttermilk—and, having acquired some of the butter fat in the process of churning, it now contains all the constituents of butter fat. The only difference that can be detected between this perfect butter and dairy butter is, first, the small proportion of the butyrine; second, the absence of the very high flavor exhibited by the best qualities of dairy butter, and third, the absence of the very strong and offensive taste which characterizes a great deal of the dairy butter.

Q. 16. As an article for human food, as a butter product, which would you give preference to as a question of hygiene, the butter product of the first five clauses of the Mége patent or the ordinary

miscellaneous butter product of the dairy as it existed in this country prior to the Mége invention?

234 A. I should give the preference decidedly to the oleomargarine as a question of hygiene—that is to say, it is a much purer and more cleanly product than the average product of the dairy.

Q. 17. In your opinion and to the extent of your knowledge was the product obtained by the process described by the Mége patent and referred to in the first claim thereof a body new in the art of rendering and treating animal fats at the date of the original Mége patent, and also the said process?

(Objected to as leading and as immaterial, irrelevant, and incompetent, and especially as there is no allegation in the answer that witness had any knowledge of either process or product prior to the date of the Mége patent.)

A. In my opinion the product was at that time a new product and the process was a new process.

Q. 18. In your opinion is there any other way of producing the butter product of the Mége patent, especially of the first five divisions of that patent, except by a substantial compliance with the processes and means described in such divisions?

(Objected to as leading.)

A. There is not.

Adjourned to Saturday, Dec. 8th, 1883, at 10 a. m.

Met, pursuant to adjournment, on Dec. 8th, '83, at 10 a. m.
Present: Same as before.

Q. Have you read — testimony introduced in evidence and marked "Complainants' Exhibit Copy Infringement Testimony," which details and set forth the process used and product produced by the defendants in their treatment and production of animal fats and the summary thereof? And, if so, please state whether or not the process set forth in such testimony and summary and the product obtained thereby is substantially alike and as is set forth and described in Complainants' Exhibit Mége Patent and shown in the two claims thereof, and give your reasons for any opinion you may express.

235 A. I have read the papers referred to and, in my opinion, the process described as conducted by defendants is substantially the process described and claimed in the Mége patent and the product of defendants is the product described and claimed in the Mége patent. My reasons for considering the process of the defendants substantially identical with the process of the Mége patent are the following:

First. Mege, in the section entitled "Neutralization of the Ferments," washes the raw fat with water to which an antiseptic had been added. The defendant washes with water and uses an antiseptic temperature secured by the aid of ice in place of an antiseptic

substance, the former being the well-known equivalent of the latter. The defendant therefore accomplishes the cleansing of the raw fat and prevents decomposition of blood and tissues in substantially the same manner as the patentee.

Second. The patentee crushes the raw fat after it has been subjected to the cleansing process by means of millstones. The defendant accomplishes the same crushing or disintegration by means of revolving knives in what is called a hasher. While defendant's apparatus is more economical and more effective than the patentee's, it is manifestly a complete equivalent.

Third. The concentrated digestion of the patentee has for its object the liberation of the fat from the cellular membranes containing it as well as its fusion and its complete separation as a separate layer from the water all soluble substances present, and the tissues and membranes, all of which form a separate layer beneath the fat. To accomplish the liberation of the fat from the cells in which it was originally contained the patentee relies in part upon the previous crushing, in part upon the use of the artificial gastric juice, and in part upon the elevated temperature. The defendant accomplishes the same result by the previous crushing and the elevated temperature and by a more perfect crushing and a more elevated temperature is able to omit the use of the artificial gastric juice. The more perfect crushing and the higher temperature constitute a substantial equivalent for the less perfect crushing, the lower temperature and the use of the gastric juice. The final separation of the molten fat from the water, tissue, etc., is accomplished by the
236 patentee and the defendant in exactly the same way—namely, by heat, salt, and mechanical agitation. The fourth step in the process is accomplished by patentee and defendant in exactly the same manner—namely, by cooling the molten fat to about 86° F. and causing the stearine to crystallize or granulate. The fifth and last step in the process involves the separation of the stearine, which is solid, from the oleomargarine, which is liquid. The patentee accomplishes this with a centrifugal machine, sometimes supplementing the centrifugal with the press. The press of the defendant alone is a substantial equivalent for the centrifugal machine. The entire process of the defendant is thus substantially the process of the patentee. The product of the defendant's process possesses all the properties, both chemical and physical, of the product of the patent. It consists of oleine, margarine, and stearine. It has the same melting point and consistence, and, like the product of the patent, is free from all tallowy or fatty taste or odor.

Q. 20. Have you read at my request (Mr. Offield) the testimony heretofore given in this case by Professor Henry Morton?

A. I have.

Q. 21. Your direct testimony shows for itself wherein you agree or differ from Professor Morton in relation to the direct testimony given by him. I will ask you, however, whether or not, generally and substantially, you agree with the statements, opinions, deductions, and conclusions of Professor Morton in his treatment of the

various subjects-matter concerning which the defendants' counsel saw fit to interrogate him in such designated cross-examination?

A. I agree with Professor Morton entirely.

Q. 22. From your official connection with the board of health have you had any occasion to ascertain the comparative value of the slaughtering of cattle in the city of New York, relatively to some of the principal business industries of the country? And, if you have, please state the results thus ascertained.

(Objected to as immaterial, irrelevant, and incompetent.)

A. The supervision of the abattoirs devolves upon the
237 board of health, and while I occupied the position of president of the board I made myself familiar with all the operations conducted in them or in connection with them, including the slaughtering of the animals and the subsequent treatment of the meat, hides, fat, etc. I studied the various processes for treating the fat, blood, offal, etc., so as to convert them into marketable forms without the production of offensive emanations. The subject was one of great importance, as owing to the careless management of some of the establishments it was seriously proposed to drive the entire business out of the city. Two very important considerations led to the abandonment of this proposition. One of these was the enormous magnitude of the interests involved, and the other was the fact that all the operations incident to the business could be conducted within the city limits without offense. I found at that time that the value of all the products of these establishments exceeded that of the entire anthracite production of the United States; that it exceeded the entire petroleum product of the United States, and that it about equaled in value all the gold and silver product of the entire county.

Q. 28. Please state whether at any time you were called upon in any official capacity to make a report to the board of health of the health department of the city of New York upon the subject of oleomargarine as an article of food; and, if yea, state fully by whom you were requested to make such report, and append a copy of the same to your answer.

(Objected to as immaterial, irrelevant, and incompetent, and this objection is specially made to the introduction of a copy, printed or otherwise, of any reports made by the witness.)

A. I was directed by the board of health of the city of New York, in response to resolutions of the board of aldermen calling upon the health department to investigate the purity, healthfulness, and value of oleomargarine as an article of food; the result of this investigation was reported by me to the health department on the second day of May, 1881. It was accepted by the board of health and forwarded by resolution to the board of aldermen. It
238 was afterwards printed by order of the board of aldermen in the City Record, the official paper published by the city government, on May 11th, 1881. I submit herewith a copy of the same, cut from the "City Record" of the above date:

The president laid before the board the following communication from the health department:

"HEALTH DEPARTMENT, No. 301 MOTT ST.,
"NEW YORK, *May* 3, 1881.

"To the honorable the board of aldermen:

"At a meeting of the board of health, held this day, a report of the president on oleomargarine was presented and approved and a copy was ordered to be forwarded to your honorable body, as a response to resolution adopted on the 28th ult. and received on that date from your honorable body.

"A copy of the report is enclosed.

"Very respectfully, EMMONS CLARK, *Secretary.*"

"NEW YORK, *May* 2, 1881.

"To the board of health of the health department:

"Having been directed by this board to investigate the subject of oleomargarine, in response to the resolutions of the board of aldermen, I would beg leave to submit the following report:

"The resolutions directing the inquiry are as follows:

"'Whereas there is existing at the present time in the minds of the public great alarm and distrust in relation to the adulteration of food products; and

"'Whereas the committee on public health of the Assembly of this State has been for some time investigating the adulteration of food products, and especially oleomargarine; and

"'Whereas this committee have conducted such investigation by calling as witnesses principally dealers in butter, and have not examined as witnesses medical or chemical experts to determine the value of oleomargarine as food: Therefore—

"'Resolved, That the board of health of this city be, and they are hereby, requested and directed to take immediate measures
239 to investigate in the most thorough manner, by medical and chemical aid, the purity, healthfulness, and value of said product as an article of food, and to report to this body the results of their investigation, with such recommendations, if any be necessary, as may relate to the manufacture and distribution of the same as an article of food.'"

This subject has been before the board on former occasions, and I have little to add to what has been previously stated.

Oleomargarine, invented by the distinguished French chemist, Mége Mouries, is manufactured in New York city in a few large establishments. The material is fresh beef suet, brought directly from the slaughter-houses. It is thoroughly washed, rendered very carefully, strained to remove a portion of the hard stearine, and then churned with milk to convert it into artificial butter, which contains the same constituents as dairy butter. The process is extremely ingenious and simple and is executed by machinery. Nothing objectionable exists in the original material, nor is anything objectionable added during the process, and the operations are conducted with

the utmost cleanliness. The product is palatable and wholesome, can be made of uniform quality the year round; it is in every respect superior as an article of food to a large proportion of the dairy butter sold in this city, and can be manufactured at a much lower price. I regard it as a most valuable article of food, and consider it entirely unexceptionable in every respect. In this opinion I am supported by the best scientific authorities in the country. The following distinguished chemists, after carefully studying the manufacture, have made the most decided statements in favor of this new article of food:

Prof. George F. Barker, University of Pennsylvania.
Dr. Henry A. Mott, Jr., New York.
Prof. G. C. Caldwell, Cornell University, Ithaca, N. Y.
Prof. S. W. Johnson, Yale College, New Haven, Conn.
Prof. C. A. Goessmann, Massachusetts Agricultural College, Amherst, Mass.
Prof. Henry Morton, Stevens Institute, Hoboken, N. J.
Prof. Charles P. Williams, Philadelphia.
240 Prof. W. O. Atwater, Wesleyan University, Middletown, Conn.
Prof. J. W. S. Arnold, University of New York.

I would further say that this question is one on which there is no difference of opinion among scientific investigators familiar with the chemistry of dairy products and fats. I have never seen a statement emanating from any person having any standing among scientific men in which a contrary opinion is advanced. There has recently been a very strong confirmation of my opinion published in England. A bill came before the house of commons in England directed against this kind of butter from America, and after considerable discussion was defeated by a vote of seventy-five to fifty-nine. In the discussion the strongest opponent to legislation against it was Dr. Lyon Playfair, one of the most distinguished chemists and sanitary authorities in England. A pupil of Graham and Liebig, he has filled the chairs of chemistry in the Royal Institution of Manchester and at the University of Edinburgh; was appointed chemist to the Museum of Practical Geology by Sir Robert Peel; represented the Universities of Edinburgh and Aberdeen in Parliament; was postmaster general in the first Gladstone cabinet; has been member of several sanitary commissions, and is now a leading member of Parliament. In his remarks he stated "that bad butter is a fraud upon the poor and oleomargarine would sooner or later drive it out of the market." He thought that "good oleomargarine at one shilling a pound was a great deal better and cheaper than bad butter at one shilling fourpence a pound," and he said that, "as a general rule, the former, oleomargarine, did not become so readily rancid as the latter, butter."

I would further state that, as there is nothing unwholesome in oleomargarine, no legislation in regard to this article is necessary to protect the public health.

I append to this report a copy of the resolutions adopted by this board on February 8, 1878, in response to a resolution of the State

senate requesting an opinion, and also a copy of a report which I made on March 27, 1878, in response to an inquiry addressed
241 to me by Hon. M. R. Wise, chairman of the Committee on Manufactures of the House of Representatives.

All of which is respectfully submitted.

C. F. CHANDLER, *President.*

Q. 24. State whether you were required in any official capacity to make a report to the senate of the State of New York concerning oleomargarine as an article of food, and, if you will, annex a copy of any such report to your answer.

(Same objection by defendants' counsel.)

A. In February, 1878, the senate of the State of New York directed the board of health of the city of New York to report upon the subject of oleomargarine. In response to this direction the subject was investigated, and the board reported by resolutions which were signed by myself as president of the board.

A copy of this report was sent to the board of aldermen in connection with a report made to them in May, 1881, mentioned in my last answer, and was printed in the "City Record." In connection with that report of the issue of May 11, 1881, I append a copy of the same, cut from the paper:

Report to the Senate of the State of New York.

"NEW YORK, *February* 8, 1878.

"To the honorable the senate of the State of New York:

"The board of health of the health department of the city of New York, having been requested to report upon the subject of oleomargarine by the following resolutions of the honorable the senate of the State of New York—

"Resolved, That the board of health of the city of New York be requested to report to the Senate at as early a day as possible—

"First. Whether in the opinion of said board oleomargarine is a good and wholesome article of food.

"Second. That if it is not, what legislation is required to effectually prevent its manufacture and sale.

242 "Third. That if it is, what additional legislation is necessary to prevent its imposition upon the public as pure butter, the product of the dairy.

"Has given to the subject due consideration and is of the opinion:

"First. That oleomargarine is a good and wholesome article of food.

"Second. That no legislation is necessary to prevent its imposition upon the public as pure butter, the product of the dairy, additional to chapter 415 of the laws of 1877.

"All of which is respectfully submitted.

"By order of the board.

"C. F. CHANDLER, *President.*
"EMMONS CLARK, *Secretary.*

"A true copy.
"EMMONS CLARK."

Q. 25. State whether, at any time, you have been officially addressed by any committee of the House of Representatives of the United States and requested to communicate your views on the manufacture of artificial butter, its healthfulness and value as an article of food; if yea, please annex a copy of your reply to any such committee to your answer.

(Same objection reiterated by defendant's counsel.)

A. In March, 1880, I was requested by the Hon. M. R. Wise, chairman of the Committee on Manufactures of the House of Representatives, to give him information with regard to the artificial butter, in view of possible legislation on the subject. I reported to him under the date of March 27, 1880, and I append a copy of the said report, which was printed in the "City Record," as one of the papers submitted to the board of aldermen.

Letter to Hon. M. R. Wise, Chairman of the Committee on Manufactures, House of Representatives.

HEALTH DEPARTMENT, 301 MOTT ST.,
NEW YORK, *March* 27, 1880.

MY DEAR SIR: In reply to your letter of inquiry, I would say that I have been familiar with the discovery of Mége Mowries,
243 and its application in the manufacture of artificial butter, called "butyrine" or "oleomargarine," since the date of its first publication.

I have frequently seen it manufactured, witnessing all the operations and examining both the material and the product.

I have studied the subject with special reference to the question of its use as food in comparison with the ordinary butter made from cream, and have satisfied myself that it is quite as valuable as the butter from the cow; that the material from which it is manufactured is perfectly fresh beef suet; that the processes are harmless; that the manufacture is conducted with great cleanliness.

The product is palatable and wholesome, and I regard it as a most valuable article of food, and consider the discovery of Mége Mowries as marking an era in the chemistry of fats.

Butyrine is manufactured of uniform quality the year round, and can be sold at a price far below that at which ordinary butter is sold. It does not readily become rancid, and is free from the objectionable taste and odor which characterize a large proportion of the butter sold in this market.

I am informed that there are at present thirteen factories in the United States licensed under the patents to manufacture this butter. The Commercial Manufacturing Company of New York is making at the present time from 30,000 to 40,000 pounds daily.

In addition to this industry there is a large manufacture of what is known as "oleomargarine oil," which is shipped as such to Europe, to be there converted into butter, so that this product has become an important article of export to foreign countries.

The beef suet which was formerly converted into common tallow, only suitable for the manufacture of soap, is by this beautiful discovery now manufactured into oleomargarine oil and stearine of double the value of the tallow formerly produced. The following analysis, made by Drs. Brown and Mott, sufficiently illustrate the composition of the butyrine:

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Constituents.	No. 1. Natural butter.	No. 2. Artificial butter.
Water	11.968	11.203
Butter solids	88.032	88.797
	100.000	100.000
Oleine	23.834	24.893
Palmatine		
Insoluble fats:		
Stearine		
Arachin	51.422	5.629
Myristin		
Soluble fats:		
Butyrine		
Caprin		
Caproin	7.432	1.823
Caprylin		
Caseine	.192	.621
Salt	5.162	5.162
Coloring	Trace.	Trace.
	88.032	88.797

Last winter a resolution was adopted by the Legislature of the State of New York requesting the board of health of the city of New York to investigate the subject and report whether, in its opinion, the butterine is a wholesome article of food.

In response to this resolution the board of health stated that, in its opinion, there is no sanitary objection whatever to the unrestricted manufacture and sale of this substance.

In support of my opinion herein expressed I enclose the statement to the same effect made by Prof. George F. Barker, of the University of Pennsylvania; Dr. Henry A. Mott, Jr., of New York; Prof. S. C. Caldwell, of Cornell University; Prof. S. W. Johnson, of Yale College; Prof. C. A. Goessmann, of the Massachusetts Agri-

cultural College; Prof. Henry Morton, of the Stevens Institution of Technology of Hoboken; Dr. Chas. P. Williams, of Philadelphia; Prof. W. O. Atwater, of the Wesleyan University at Middletown, Conn., and Prof. J. W. S. Arnold, of the medical department of the University of New York.

245 Hoping that this, my reply, contains all the information you desire, I remain, very respectfully, yours,

CHAS. F. CHANDLER, PH. D.,
President of the Board of Heatth.

To Hon. M. R. Wise, chairman of the Committee on Manufactures, House of Representatives, Washington, D. C.

(*Letter from Prof. Barker.*)

UNIVERSITY OF PENNSYLVANIA,
PHILADELPHIA, *March* 22, 1880.

The United States Dairy Co.

GENTLEMEN: In reply to your inquiry I would say that I have been acquainted for several years with the discovery of Mége Mouries for producing butyrine from oleomargarine fat.

In theory, the process should yield a product resembling butter in all essential respects, having identically the same fatty constituents. The butyrine prepared under the inventor's patent is therefore, in my opinion, quite as valuable a nutritive agent as butter itself. In practice, the process of manufacture, as I have witnessed it, is conducted with care and great cleanliness.

The butyrine produced is pure and of excellent quality, is perfectly wholesome, and is desirable as an article of food.

I can see no reason why butyrine should not be an entirely satisfactory equivalent for ordinary butter, whether considered from the physiological or commercial standpoint.

Respectfully yours, GEORGE F. BARKER.

(*Letter from Dr. Mott.*)

H. A. Mott, Jr., Ph. D. E. M., analytical and consulting chemist.
Office, 117 Wall St.

NEW YORK, *March* 12, 1880.

United States Dairy Co.

GENTLEMEN: Having been acquainted for the past six years with the process of the manufacture of the product called oleomargarine butter or butyrine, and having made numerous microscop-

246 ical and chemical examinations of the product, I am clearly of the opinion that the product called oleomargarine butter is essentially identical with butter made from cream, and, as the former contains less of those fats which when decomposed render the product rancid, it can be kept pure and sweet for a much longer time.

I consider the product of the Mége discovery a perfectly pure and wholesome article of food, which is destined to supplant the inferior grades of butter and be placed side by side with the best product of the creamery.

Respectfully, HENRY A. MOTT, JR., PH. D.

(*Letter from Prof. Caldwell.*)

CHEMICAL LABORATORY, CORNELL UNIVERSITY,
ITHACA, N. Y., *March* 20, 1880.

I have witnessed in all its stages the manufacture of "oleomargarine" and of oleomargarine butter or "butyrine."

The process for oleomargarine, when properly conducted as in the works of the Commercial Manufacturing Co., is cleanly throughout and includes every reasonable precaution necessary to secure a product entirely free from animal tissue or any other impurity and which shall consist of pure fat made up of the fats commonly known as oleine and margarine. It is when thus prepared a tasteless and inodorless substance, possessing no qualities whatever that can make it in the least degree unwholesome when used in reasonable quantities as an article of food.

In the manufacture of butyrine—since nothing but milk, annatto, and salt, together with perhaps a little water from clean ice, are added to this oleomargarine to be intimately mixed with it by churning and other operations—I have no hesitation in affirming that this also, when properly made according to the Mége patent and other patents held by the United States Dairy Co. and when used in reasonable quantities, is a perfectly wholesome article of food, and that, while not equal to fine butter in respect to flavor, it nevertheless contains all the essential ingredients of butter; and since it contains a smaller portion of volatile fats than is found in genuine butter, it is, in my opinion, less liable to become rancid.

247 It cannot enter into competition with fine butter, but in so far as it may serve to drive poor butter out of the market its manufacture will be a public benefit.

S. C. CALDWELL.

(*Letter from Professor Johnson.*)

SHEFFIELD SCIENTIFIC SCHOOL OF YALE COLLEGE,
NEW HAVEN, CONN., *Mar.* 20, 1880.

The United States Dairy Co.

GENTLEMEN: I am acquainted with the process discovered by M. Mége for producing the article known in commerce as oleomargarine or butyrine.

I have witnessed the manufacture in all its stages as carried out on a large scale, and I can assert that when it is conducted according to the specifications of M. Mége it cannot fail to yield a product that is entirely attractive and wholesome as food, and one that is for

all ordinary culinary and nutritive purposes the full equivalent of good butter made from cream.

Oleomargarine butter has the closest resemblance to butter made from cream in its external qualities—color, flavor, and texture. It has the same appearance under the microscope, and in chemical compositions differs not in the nature but only in the proportions of its components. It is therefore fair to pronounce them essentally identical.

While oleomargarine contains less of those flavoring principles which characterize the choicest butter, it is perhaps for that very reason comparatively free from the tendency to change and taint, which speedily renders a large proportion of butter unfit for human food. I regard the manufacture of oleomargarine or butyrine as a legitimate and beneficent industry.

S. W. JOHNSON,
Professor of Theoretical and Agricultural Chemistry, Director of the Connecticut Agricultural Experiment Station.

(*Letter from Prof. Goessmann.*)

AMHERST, MASS., *Mar.* 20, 1880.

United States Dairy Co., New York.

GENTLEMEN: I have visited, on the 17th and 18th of the
248 present month, your factory on West Forty-eighth street for the purpose of studying your mode of applying Mége's discovery for the manufacture of oleomargarine butter or butyrine. A careful examination into the character of the material turned to account as well as into the details of the entire management of the manufacturing operation has convinced me that your product is made with care and furnishes thus a wholesome article of food. Your oleomargarine butter or butyrine compares in general appearance and in taste very favorably with the average quality of the better kinds of the dairy butter in our markets. In its composition it resembles that of the ordinary dairy butter, and in its keeping quality, under corresponding circumstances, I believe it will surpass the former, for it contains a smaller percentage of those constituents (glycerides of volatile acids) which, in the main, cause the well-known rancid taste and odor of a stored butter.

I am, very respectfully, yours,

C. A. GOESSMANN, PH. D.,
Professor of Chemistry.

(*Letter from Prof. Morton.*)

STEVENS INSTITUTE OF TECHNOLOGY,
HOBOKEN, N. J., *March* 16, 1880.

United States Dairy Co.

GENTLEMEN: During the last three years I have had occasion to examine the product known as artificial butter, oleomargarine or

butyrine, first produced by M. Mége of Paris, and described by him in his patent of July 17, 1869.

I have also frequently witnessed the manufacture of this material, and with these opportunities of knowing exactly what it is I am able to say with confidence that it contains nothing whatever which is injurious as an article of diet, but, on the contrary, is essentially identical with the best fresh butter, and is very superior to much of the butter made from cream alone which is found in the market. The conditions of its manufacture involve a degree of cleanliness, and consequent purity in the product, such as are by no means necessarily or generally attained in the ordinary making of butter from cream.

Yours, etc., HENRY MORTON.

249 (*Letter from Dr. Williams.*)

LABORATORY No. 912 SAMSON ST.,
PHILADELPHIA, *Mar.* 22, 1880.

During a period of upwards of two years I have been practically familiar with the details of the manufacture of the Mége method of oleomargarine butter or "butyrine." From my experience and observation of the care and cleanliness absolutely necessary in the manufacture of the product, together with my knowledge of its composition, I am satisfied that it is a pure and wholesome article of food, and in this respect, as well as in respect to its chemical composition, fully the equivalent of the best quality of dairy butter. I will add further that, owing to the presence of a less quantity of volatile fats, the keeping qualities of the oleomargarine butter are far superior to those of the dairy product.

CHARLES P. WILLIAMS, PH. D.,
Analytical Chemist, late Director and Professor Missouri School of Mines, State University.

(*Letter from Prof. Atwater.*)

WESLEYAN UNIVERSITY,
MIDDLETOWN, CONN., *Mar.* 29, 1880.

I have carefully looked into the theory and practice of the manufacture of butyrine (oleomargarine) by the "Mége process" and examined the product. A consideration of the materials used, the process of manufacture, and the chemical and microscopical character of the butyrine seems to me to justify the following statements as to its qualitative composition. It contains essentially the same ingredients as natural butter from cow's milk.

Quantitively, it differs from ordinary butter in having but little of the volatile fats, which, while they are agreeable in flavor, are at the same time liable to rancidity. I should accordingly expect butyrine to keep better than ordinary butter.

The best evidence within my reach indicates that just such is the case. The butyrine is perfectly wholesome and healthy, and has a

high, nutritious value. The same entirely favorable opinion I find expressed by the most prominent European authorities, En-
250 glish, French, and German, who are unanimous in their high estimate of the value of the "Mége discovery" and approval of the material whose production has thereby been made practical.

I am, very truly, yours, W. O. ATWATER.

(*Letter from Prof. Arnold.*)

UNIVERSITY PHYSIOLOGICAL LABORATORY,
410 EAST 26TH ST., *April* 2, 1880.

This is to certify that I have carefully examined "Mége patent process" for the manufacture of oleomargarine butter or butyrine; that I have seen and tasted at the factory each and every ingredient employed; that I have made thorough microscopical examinations of the materials used and of the butter, and I consider that each and every article employed in the manufacture of oleomargarine butter or butyrine is perfectly pure and wholesome; that the oleomargarine butter differs in no essential manner from butter made from cream; in fact, the oleomargarine butter possesses the advantage over natural butter of not decomposing so readily, as it contains fewer volatile fats. In my opinion, oleomargarine is to be considered a great discovery, a blessing for the poor, and in every way a perfectly pure, wholesome, and palatable article of food.

J. W. S. ARNOLD, A. M., M. D.,
Prof. Physiology and Histology, Med. Dep., Uni. New York.

Which was ordered to be printed in the City Record.

(Counsel for the defendant protests against this abuse of the privilege of examination and gross violation of the rules of evidence by the attempted introduction in evidence of the foregoing reports and the printed copies of letters of persons not witnesses and not subject to cross-examination, and gives notice that at the hearing he will move to strike out each and all of the foregoing reports and letters.)

251 Q. 26. Were any of these opinions, statements, or reports which are appended to your answers of the three preceding questions made by you in the service of the complainants or either of them, or were you compensated by them therefor?

A. Neither of these reports were made in the service of the complainants, nor did I ever receive compensation for either one of them; they were made as a part of my duty as president of the board of health of the city of New York.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. You have stated in answer to direct question 21 that you agree with Prof. Morton entirely as to the evidence given by him upon his cross-examination. With a view of somewhat abridging the time of your cross-examination, I will ask you if you agree with the answers given by Prof. Morton to the cross-interrogatories addressed to

him, and accept them and make them your own the same as if the several interrogatories were now addressed to you?

A. I do.

C. Q. 2. You have referred to the amount of animal products formerly produced in New York. Is it not well understood, as shown by the other testimony in this case, that the number of animals slaughtered in New York is vastly less than it was at the time you mentioned?

A. While I have not had occasion within the last two or three years to pay much attention to this subject, I believe it is a fact that the slaughtering of beeves have been largely transferred from New York to Chicago.

C. Q. 3. You have been asked by counsel on the direct examination as to whether the statements referred to in question twenty-six were made by you in the service of the complainants or either of them. Is it not a fact that you were then under retainer as an expert from the owners of the Mége patent, and that you had previously and also subsequently performed services for them in connection with the Mége patent, for which you received ample compensation?

252 A. It is not a fact that I was then under a retainer. It is true, however, that previous to this date I had been employed by the owners of the Mége patent to make investigations, and in 1875 I made an affidavit in connection with the patent, and that I received compensation for my services. It is also true that subsequent to the investigation by the board of health I was called upon to make investigations in connection with the patent, and that I made a deposition in 1881, October and November, in connection with the patent, and that I received compensation for this service.

C. Q. 4. Did you receive, either before or afterwards, what is known among experts as a retainer or a rate of payment equivalent thereto?

A. In the first instance I received a payment in advance amounting to $500, but I did not and have never received what is understood among experts as a general retainer, to bind me to the interests of the parties and to be counted as a sum in addition to payment for actual services.

C. Q. 5. And, in a word, you would have felt at liberty at any time after receiving that $500 to appear and testify as an expert in behalf of any opponent to the owners of the Mége patent who was sued upon that patent, would you?

A. I should, provided the parties sued were not the same parties, and also provided a different issue had been presented. I could not, of course, appear on both sides of the same issue, although presented by different parties. In fact, I never act as an expert in any patent litigation until I have satisfied myself that my views are fully in accord with the interests of the parties I am asked to serve.

C. Q. 6. You have stated that you have been previously employed by the owners of the Mége patent to make investigations. When was you first employed in these investigations?

A. Without any data before me to which I can refer, I should say it was in 1874 and 1875.

C. Q. 7. Will you examine your note-books and books of account, so as to tell us Monday?

A. I will.

253 C. Q. 8. You have mentioned, in answer to direct question five, the work of Alfred Paraf, the French chemist. Was Mr. Paraf a chemist of ability?

A. He was.

C. Q. 9. What were your opportunities of intercourse with him which enabled you to form this estimate of his abilities as a chemist?

A. When he first came to New York he brought a letter of introduction to me, and I often conversed with him upon various chemical topics, and I found that he was very well informed on the chemical arts.

C. Q. 10. You also mentioned the fact that he erected a factory. When was this factory erected and where was it located and for what purpose was it established?

A. It was a factory for the manufacture of artificial butter, and was located in the upper part of the city of New York; I have forgotten the particular street. As nearly as I can recollect, it was erected in 1872 or 1873; I do not recollect whether it was early or late in 1872 or early in 1873.

C. Q. 11. Was this artificial butter manufactured in his factory on a commercial scale?

A. I can hardly say with certainty whether his work in this factory went beyond the experimental stage, as he was engaged in raising capital and organizing a stock company to manufacture artificial butter.

C. Q. 12. How long a period of time elapsed between the time he first came to your laboratory and the time he erected this factory?

A. That I cannot say with precision or even approximately. I think some months must have elapsed.

C. Q. 13. You stated in answer to direct question 5, "He requested permission from me to use the conveniences of my laboratory for repeating the experiments of Mége and testing some theories of his own with regard to improvements in the process. His experiments were conducted under my observation, in the laboratory where he conducted his investigations, until he established a company and erected a factory and laboratory of his own," and now you state that you are unable to say with certainty whether his work in this factory went beyond the experimental stage. Would not his

254 work evidently have passed through "the experimental stage" in your laboratory before he erected the factory?

A. Not necessarily. In my laboratory he was only able to operate on a few pounds of material at a time, the heating apparatus consisting of a small cooking stove and an ordinary kettle of water.

C. Q. 14. But would not the result of these experiments, even though conducted upon a small scale, have established all the necessary facts and rendered further experiments in his factory unnecessary?

A. I think not. Experiments on a small scale rarely, if ever,

dispose of a problem in the chemical arts. It is impossible to apply exactly the same conditions on the small scale as on the large scale.

C. Q. 15. Yes, but what elements of the problem in this case were left to be ascertained in the factory after he had completed the experiments in your laboratory?

A. In the first place it had to be ascertained whether a sufficient quantity of raw fat could be obtained in a proper condition of freedom from taint and incipient decomposition to make it possible to produce the oleomargarine of proper quality on a manufacturing scale. It remained to be seen whether the new product was a sufficiently satisfactory substitute for dairy butter to find a market. It remained to be seen whether workmen could be secured with sufficient skill and fidelity to carry out the processes of the invention with the same care that had been exercised by the professional chemist in his laboratory experiments. It remained to be seen whether the product could be preserved and transported without undergoing any change that would injure its quality.

C. Q. 16. Yes; it remained to be seen whether the proper fat could be bought and the product sold and transported, and whether skillful workmen could be obtained. But what elements of the problem of the working of the process in this case required an experimental stage in the factory after he had conducted his experiments, even on a small scale, in your laboratory?

A. Besides the problem which I have already mentioned, it was necessary to select and test on a large scale a machine for crushing
the fat, suitable jacketed kettles, a mechanical agitator, a cen-
255 trifugal machine or press, and then, to convert the oleomargarine into more perfect butter, to select a suitable churn or other device for converting it into an emulsion with milk or cream, and to select the proper coloring matter. The erection and equipment of every factory for putting into practice a new industry is an experiment, and it is often necessary to change the apparatus, modify and replace it, before the new process can become a commercial success. One can never tell by the success of a process on a small scale how it is going to work on a large scale.

C. Q. 17. But at the end of his series of experiments in your laboratory he had achieved such a measure of success in the working of the process as to determine all the facts necessary to be known to work it successfully before he erected his factory, had he not?

A. I am not sure that he had. I think he had achieved such a measure of success as led him to believe that capital could be enlisted and a new commercial enterprise inaugurated.

C. Q. 18. You say you are not sure that at the end of his series of experiments in your laboratory he had achieved such a measure of success in the working of the process as to determine all the facts necessary to be known to work it successfully before he erected his factory. What facts, if any, necessary to be known to work the process successfully were subsequently developed and made known either in any "experimental stage" in his factory or elsewhere?

A. Why, the fact that it could be worked successfully on a large scale was the fact to be determined, and that the mechanical devices

and utensils selected for executing it on a large scale were suitable; that the product would keep without acquiring tallowy odor and taste, and that it was acceptable to the world at large as a substitute for butter. It might have been found in working on a large scale that some decomposition would have occurred in some stage of the process which would have rendered the product unpalatable.

C. Q. 19. What were the new theories of his own which he requested your permission to test in your laboratory, or which he tested under your observation?

256 A. I do not recollect his theories at all. I took very little interest in his experiments, as it did not seem probable to me at that time that the business of manufacturing artificial butter would ever acquire any great importance.

C. Q. 20. You stated on your direct examination that his experiments were conducted under your observation in the laboratory. Can you describe the series of experiments made by him?

A. Only in a general way. He had before him a copy of the Moniteur Scientifique, in which was an account of Mége's discovery and invention, and he procured a quantity of rough fat, some stomachs, and some mammary glands and he went through the operation of making both oleomargarine oil and perfected butter. As nearly as I can recollect, he spent a week or two in one of the rooms in the basement of our laboratory building, selecting that particular room because there happened to be a cooking stove in it, which we used for preparing distilled water. It was not the room in which I was in the habit of cooking, but I visited it from time to time while he was working and observed what he was doing, and he talked with me with regard to his work, but at this late day it is impossible for me to recall more than the general fact that he repeated Mége's processes. To what extent or in what direction he modified these processes in any of his experiments I do not now recollect.

(Counsel for the defendant objects to that portion of the above answer relating to the Moniteur Scientifique because it is not responsive to the question and because there is no question in the cross-examination inquiring into said paper or the contents thereof.)

Adjourned to Monday, December 10, 1883, at 2.30 p. m.

Met pursuant to adjournment on December 10, 1883, at 2.30 p. m. Present: Same as before.

C. Q. 21. What temperatures or ranges of temperatures did Paraf employ in any of his series of experiments in working out his process? Please state to the best of your recollection, as you

257 have stated that you visited his room from time to time while he was working and observed what he was doing, and that he talked with you with regard to his work.

A. I have no definite recollections with regard to the temperatures which he employed. The experiments were conducted more than ten years ago, and I had no interest in them beyond curiosity. He began by repeating the experiments of Mége, as described in the

Moniteur Scientifique. To what extent, if any, he modified Mége's processes while experimenting in my laboratory I do not recollect, nor do I recollect the details of Mége's article.

(Same objection as to the previous answer.)

C. Q. 22. You say you have no very definite recollections. Please give your general recollections or impressions with regard to the ranges of temperatures he employed.

A. I simply recollect that he used low temperatures, and I presume that when he used artificial gastric juice he must have kept the temperature down to a little above 100° Fahrenheit. Whether he omitted the use of gastric juice in any case I do not recollect.

C. Q. 23. Why do you presume this?

A. Because gastric juice does not act at a temperature much above this.

C. Q. 24. Do you think that Paraf knew this fact, or is there some other reason why you presume as stated above?

(Complainants' counsel objects to the last and all the foregoing interrogatories as incompetent, wholly irrelevant, and not cross-examination in any respect.)

A. I don't know whether Paraf knew it or not. The only reason I have for thinking he may have known it is that Mége probably knew it and that there was probably some reference to it in his article.

(Same objection as to preceding answers.)

C. Q. 25. Did Paraf embody the results of his work in a patent, or was there a patent issued to him for making oleomargarine, and did this patent specify a range of temperature at which his process was to be conducted?

A. A patent was issued to Paraf, and I believe it did indicate a range of temperature.

258 C. Q. 26. What was the range of temperature?

A. I don't recollect.

Counsel for defendant here offers in evidence a certified copy of letters patent No. 137,564, dated April 8, 1873, granted to Alfred Paraf, for an improvement in purifying and separating fats, and requests the notary to mark the same for identification.

(Objected to as incompetent, irrelevant, and not cross-examination.)

C. Q. 27. Have you examined your note-books and accounts as requested Saturday?

A. I have, and I want to make a correction in my testimony of Saturday, as I find that the entry in my cash-book, dated March 28, 1876, entitles the $500 received on that day as a retainer, although I had considered it as a payment in advance. That is the only sum that I ever received from the oleomargarine company or any one representing it or the patents which was in any sense a retainer. On

May 30, 1877, after that work was terminated, I received another check of the same amount, and the account was closed. On February 8, 1878, in response to resolutions of the State senate, I made a report, which was adopted in the form of resolutions by the board of health, with regard to the wholesomeness of oleomargarine. That report was repeated subsequently, with a little more detail, to Mr. Wise, chairman of a committee of the House of Representatives, in response to his written request. It was subsequently repeated to the board of aldermen of the city of New York at a request of the board, expressed by a resolution and addressed to the board of health. I was not under pay at the time the first report was made, nor was I ever paid for the service, if it be called a service, nor was I under pay or retainer on either of the occasions when the report was repeated, as I have stated. It is a fact, however, that I was called in the fall of 1879 to perform services, and was paid for them, and I was again called in October and November of 1881 to perform services, and was paid for them.

C. Q. 28. When did you first make any experiments or perform any services for any of the owners of the Mége patent?

A. Early in 1876.

259 C. Q. 29. Did you make any experiments or perform any services for any of them for the purpose of determining the effect upon the product of the employment of different temperatures in melting the fat and the effect at the different temperatures?

A. I did, in 1876.

C. Q. 30. What did you then ascertain to be the effect upon the product of the different temperatures tested by you?

A. I found that if the temperature was carried too high the product acquired a fatty taste and odor more or less like that of tallow. I cannot recollect exactly the temperatures which I tested, but I am quite sure that 150° and even 140° was sufficient. How much below this would be sufficient to develop it I do not recollect.

C. Q. 31. In a word, what did you find to be the best range of temperature?

A. The lowest temperature that would practically accomplish the result.

C. Q. 32. Please state the range of temperature you found best adapted to the purpose.

A. 120° answered the purpose, and I made no experiments below that temperature, the object of my experiments being not to find the lowest temperature practicable but to determine the effect of high temperatures.

C. Q. 33. Did you employ any gastric juice in the experiments to which you have above referred?

A. I do not think I ever did.

C. Q. 34. Did you make notes regarding these experiments and what you observed in making them?

A. I did not keep a regular note-book, but I made memoranda of such points as I thought it desirable to remember on a pocket pad, so that the notes were on loose pieces of paper, which answered my purpose for the time being.

C. Q. 35. Are those memoranda or copies summaries or resumé of them now in existence?

A. I presume some of them are. I have a drawer full of pamphlets, newspapers, extracts, patents, and memoranda relating to oleomargarine, and some of these slips from my pad are among
260 them. Some of them may have been handed at the time to counsel and not returned to me.

C. Q. 36. Will you kindly search and bring here to-morrow for examination all the notes, memoranda, etc., relating to the experiments performed or investigations made by you relating to the processes of making oleomargarine and referred to above?

(The witness is instructed by counsel for complainant that he can use his own volition as to the matters inquired of in the last question; that he is under no obligation to disclose his personal and business relations as to the matters inquired of, and as a question concerning in any manner the complainants in this case the subjects matter inquired of are totally irrelevant and not cross-examination in any respect.)

A. As far as I am personally concerned I should be perfectly willing to look through my papers and to collect together all memoranda that I have ever preserved relating to experiments in connection with oleomargarine, but it does not seem fair that experiments that I made seven years ago at the expense of the United States Dairy Company should be produced for the benefit of the defendants in this suit or for the purpose of gratifying their curiosity. Unless I am, therefore, instructed by counsel for complainants that it is my duty as a witness to hunt up these papers and produce them I must decline to do so.

(Counsel for defendants requests the notary to note the fact that counsel for complainant said to witness, "Just say I don't think it is fair to do it and I won't do it.")

(Counsel for complainants states that if defendant's counsel desires to interrogate this witness, as he has done for nearly two days past, upon irrelevant outside matters he is requested to call him as his own witness and pay the witness for his time, and not enforce upon these complainants the employment and payment for the time of an expert witness upon matters wholly irrelevant to this case, and, if possibly relevant at all, relevant only under some imaginable
261 theory of defendant's counsel, and which in any decency in the trial of the case is to be developed by the testimony of his own expert witnesses to be employed and paid for by the defendants.)

Adjourned to Tuesday, December 11, 1883, at 10 o'clock a. m.

Met, pursuant to adjournment, at 10 a. m., December 11, 1883. Present: Same as before.

Adjourned to Tuesday, December 11, 1883, at 12.30 p. m.

Met, pursuant to adjournment, at 12.30 p. m., December 11, 1883.

Present: Same as before.

C. Q. 37. Regarding the use of gastric juice in artificial digestion, directed by Mége in division III of this process, is there in the patent any suggestion that it may be dispensed with or that any good result can be obtained without using it?

A. Only so far as it is contained in the first claim of the patent, which is for the improved material herein described produced by treating animal fats so as to remove the tissues and other portions named with or without the addition of substances to change the flavor, consistency, or color as set forth. The addition of substances to change the flavor, consistency, or color undoubtedly refers to what is contained in the sections VI, VII, VIII, but the improved material mentioned in the first line of the claim refers as well to the product of the first five sections, which is the oleomargarine or margarine extracted from the raw fat in such way as to avoid the production of fatty and tallowy tastes and odors.

C. Q. 38. Does Mége, in the directions he gives for conducting the process in the patent, make any such suggestion as I have mentioned?

A. He does not.

262 C. Q. 39. Is it your opinion, in common with Prof. Morton, that prior to Mége nothing whatever was known as to the effect produced by rendering fat at a comparatively low range of temperature?

A. It is.

C. Q. 40. You were asked in direct question 12 what effect has the employment of comparatively low and comparatively high temperatures in the rendering of animal fats upon the character and qualities of the fact product. I will now ask you, if counsel for complainants does not deem it irrelevant, to kindly state what you have ascertained from experiment to be the effect upon the product of the employment of different temperatures in rendering the fat, giving specifically, if you are able to remember, the changes which take place with each elevation of ten degrees of temperature.

A. All that I can recollect now with regard to the experiments made so many years ago is that when the temperature rose materially above 120°, say, between 130° and 140°, the product began to exhibit the fatty and tallowy taste and ordor. The higher the temperature was carried the more marked and decided became these objectionable qualities in the product. There were no means of comparison except the products themselves and the more perfect butter prepared from them.

C. Q. 41. While it is, of course, very difficult, will you, as far as possible, give the characteristics of the tallowy flavor you have mentioned? Is it a pronounced flavor?

A. The tallowy flavor is a decidedly pronounced flavor, but I hardly know how to describe it.

C. Q. 42. In each of the three processes set forth in the patent for

a subsequent treatment of oleomargarine does Mége direct the employment of mammary pepsin?

A. He does.

C. Q. 42½. Disregarding the claim which you have stated, in your opinion, covers the oleomargarine with or without these subsequent treatments, is there in the directions given in the patent for conducting these various processes any suggestion that this mammary pepsin may be dispensed with or that any good result can be obtained without using it?

263 A. Only in as far as it may be contained in the first three lines of section VI, which reads as follows: "In the methods hitherto employed the margarine is tranformed into cream, and this latter into butter." As Mége invented the margarine I infer that he refers to his own experiments when he speaks of methods hitherto employed, and I should draw the conclusion that he might have made "more perfect butter" without the use of mammary pepsin, though he does not say so.

C. Q. 43. And I suppose you make the same inference with regard to the other recognitions of what had previously been done which are set forth in his patent, for example, "in order to separate the oleomargarine of the stearine separated crystallizers or crystallizations at unequal temperatures have been already employed," and in the preceding step setting forth the artificial digestion, "this method of extraction has a considerable advantage over that which has been previously essayed?"

A. I do not make the same inference in these two cases which you quote. The first one refers to the fact that others had separated stearine from fats. The second one refers to the fact that others had rendered raw fats. Mége does not claim to have been the first to perform either of these operations.

C. Q. 44. Did the owners of the Mége patent in their factory referred to by you, in working upon a commercial scale, make use of mammary pepsin in making artificial butter from oleomargarine?

A. I do not remember that they did, although I cannot say with certainty that they did not.

C. Q. 45. Professor, is it not well understood by you that in the commercial working of making artificial butter, both at this factory and generally, that mammary pepsin is not employed in the extensive manufacture of artificial butter upon a commercial scale, and that, at least, that it is often made without it?

A. That is my understanding.

C. Q. 46. Oleomargarine oil, as manufactured at that factory and generally at a temperature ranging about 120° possesses a granular character or what is termed a "grain," in which respect it differs from natural, good butter as found on the market, does it not?

264 A. When the oil is manufactured it is in a molten state, and after it has been allowed to solidify it again becomes liquid at a slight elevation of temperature. In this molten or liquid state it exhibits no grain whatever. In the solid state in which it is bought and sold it may or may not have a "grain," according to circumstances. If put while melted into large packages like tierces

and allowed to cool slowly it acquires more or less a "grain" or granular structure. If, however, it is cooled rapidly the "grain" will not be developed, and the product will not be granular. The grains are simply the little particles which congeal first in the process of cooling. By cooling suddenly I mean within a short time—that is, a few minutes or possibly an hour or two, as would result either from the use of ice or cold water or from placing it in shallow veesels, particularly if the vessels were metallic and the weather not too warm.

C. Q. 47. How is it generally as to the oleomargarine oil in the market?

A. When it is to be transported to a distance it is generally put in tierces, and it then exhibits more or less of a granular structure.

C. Q. 48. Did not the owners of the Mége patent, in their efforts to manufacture and in their manufacture of artificial butter from oleomargarine oil in their factory without the use of mammary pepsin, experience a great deal of difficulty in making artificial butter from oleomargarine, among other things in getting rid of this "grain" in the oil which does not appear in the butter; and did not you either alone or in connection with Professor Mott or others make experiments for them with a view of ascertaining the means of avoiding this "grain" or of overcoming the difficulties encountered?

A. I hardly know that this could have been called a serious difficulty. There was a question of some importance as to the best method of handling the more perfect butter after it was drawn from the churn. Dr. Mott made some experiments on this subject and I subsequently repeated some of them.

C. Q. 49. What was this question of some importance, and why was it of importance?

A. The question was simply as to the most expeditious, economical, and satisfactory treatment of the product as it came
265 from the churn, and it was important because it involved the handling of a large amount of material in a large factory. By satisfactory I mean both from a manufacturer's point of view and a consumer's point of view.

C. Q. 50. Was not the question, among other things, how to always and effectually prevent the appearance of grains or granulations in the artificial butter made from the oleomargarine oil?

A. It was.

C. Q. 51. You have stated, "I hardly know that this could have been called a serious difficulty." As your reports and the letters of other chemists not witnesses have been offered in evidence and as bearing upon the nature of this difficulty and its seriousness, I will read you the following extract from the report of Professor Henry A. Mott, Jr., E. M., Ph. D., on the "Manufacture of Artificial Butter" to the Chemical Society of the City of New York, and published in the Scientific American (supplement) November 25, 1876, vol. 2, No. 48, pages 760 and 761:

"The next process to be considered is Mége's process, patented in England on July 17, 1869, and finally patented in this country December 30, 1873, and reissued May 12, 1874. The reissue contains

all the valuable points in both Mége's English and first American patent. This reissue, as well as first patent, is the property of the United States Dairy Company. Mége patents the two principal operations in the manufacturing of butter from animal fats: First, the extraction of the oil at a low temperature from the fat; second, the converting of the oil by churning with milk into butter. Whilst Mége has patented the two important operations mentioned above, it must not be forgotten that each operation must be carried on or elaborated according to certain formulæ to produce a product such as is now produced and such as will find a ready sale. These formulæ, however, Mége failed to discover, for when cow fat is treated by any one or all of the processes proposed by him the product is little more than refined fat in some cases, and in others not as good. It is not salable in the market at hardly any price. I speak from actual experience, having made under my own directions, by order of
266 the United States Dairy Company, samples of butter by each of the processes set forth in the patent. I am referring, of course, only to the butter, for the oil produced at a low temperature as proposed by Mége has a very extensive sale and demand in the market for manufacturing into cheese, soaps, and, by my process, into butter. It will be necessary to state here very briefly the different operations as set forth in Mége's patent: Caul fat, free from blood, after thorough washing in water, is disintegrated in an ordinary meat hasher, is melted at the very lowest possible temperature, never above 125° F., in a tank surrounded by water. The melted fat, after separating from the membrane or scrap, is received in a suitable vessel and allowed to solidify, when it is packed in cotton bags and subjected to pressure at a temperature of about 80° F. The oil pressed out is collected and treated further according to the requirements of the product.

"For butter that is to be immediately used the product obtained possessed a grain, an odor, and decided flavor of soda, without having any resemblance to butter other than its color.

"For butter to be preserved the product obtained was even poorer than that above mentioned, not possessing the appearance of butter, and still having the odor and flavor of soda.

"For butter needed for longer preservation the product obtained was simply refined fat, having the odor and flavor of suet.

"In conducting my experiments my object was to manufacture a product containing no element foreign to the very best of butter. My first discovery was a process by which I was enabled completely to remove the grain from the artificial product.

"About 100 pounds of oil (from the press) were put in a churn with 33⅓ pounds of milk and two and one-half to three ounces of solution of annatto, mixed with one-half to three-fourths ounce of bicarbonate of soda. The mixture was thoroughly agitated, and then drawn off in a tub containing pounded ice, which was kept in constant motion until the tub was filled. The solidified oil was then allowed to stand for two or more hours, when it was
267 dumped on an inclined table to allow the melted ice (water) to drain off. The product was next worked with salt and

packed in firkins for sale. The material thus produced possessed no grain, and had the true color of butter, the red and the annatto being completely neutralized or removed by the addition of the small quantity of the bicarbonate of soda, quite a different quantity as proposed by Mége. I only arrived at the correct amount after a number of experiments. Although this product found a market for butter to be immediately used, still I discovered, in a short time, that it lost all odor and flavor of butter owing to the complete removal of the milk and the same by the action of the ice. How to introduce into the product the true butter odor and flavor without injuring the texture was a problem of considerable difficulty; but after working over three months on the product I discovered the true process, which is described further on."

Does not this indicate that the avoidance of this grain was a serious difficulty among other difficulties encountered in these experiments?

A. It simply indicates that Dr. Mott, describing what he claims to be his invention, states that this was a difficulty. I can hardly think that this statement determines the exact measure of the difficulty, as I understand the business of making artificial butter by Mége's process to have been a commercial success and to have attained a great magnitude before Dr. Mott claims to have discovered this process.

C. Q. 52. Was not Dr. Mott employed to make experiments for the company before you made the experiments you mentioned in this connection?

A. He was.

C. Q. 53. Do you know how long he had then been working for them?

A. I do not.

C. Q. 54. How long were you employed in making the experiments referred to?

A. I do not remember. The experiments were made from time to time—that is, these and other experiments between March 28, 1876, and May 30, 1877.

268. C. Q. 55. Were these other experiments the experiments you referred to yesterday?

A. They were.

C. Q. 56. You have read the passage quoted above from Prof. Mott's report. Please point out any statement therein contained which, in your opinion, is fallacious.

A. I think his statement that the artificial butter produced by the Mége processes "is not saleable in the market at hardly any price" can hardly be sustained by the facts, as it had been sold in the market, as I understand, in enormous quantities, and, as I remember, that the first butter made by Paraf was a very fair imitation of butter.

C. Q. 57. But, obviously, from your standpoint, the definition you have adopted for the Mége processes includes the processes where artificial digestion is not employed and where mammary pepsin is not employed, and where there is a rendering of the fat at a temper-

ature of about 120°, or, in other words, the processes by which the merchantable articles have been so long made and sold in this country, does it not?

A. It does, as does also Dr. Mott's, for in connection with that statement that "the product is not salable in the market at hardly any price" he says, "I am referring, of course, only to the butter, for the oil produced at a low temperature has a very extensive sale and demand in the market for manufacture into cheese, soaps, and, by my process, into butter."

C. Q. 58. Then am I to understand that you take no issue with what he states in the passage quoted about the first of the two important operations mentioned by him?

A. I do not know what he means to say about the first of them, for, after referring to two processes, he then says, "I am referring, of course, only to the butter," and the production of the butter he denominates "the second process." Evidently his criticisms on what Mége discovered or failed to discover apply to the production of the more perfect butter, and not to the oleomargarine oil which results from the application to raw fat of the process described in the first five sections of the Mége patent or their substantial equivalent.

269 C. Q. 59. But, referring to the butter, will you point out any language of Dr. Mott in this passage indicating that Dr. Mott made use of your definition of the Mége process in speaking of the Mége processes as meaning them when conducted without the mammary pepsin, as indicated in your answer to cross-question 57, or as otherwise there in accordance with the definite directions given in the patent?

A. I have already quoted enough from Dr. Mott to show that his criticism is limited to those parts of the Mége patent which are included in sections VI, VII, VIII, and refer to the preparation of more perfect butter. Now, limiting your question to these processes of Mége, I will answer that I do not see anything in Dr. Mott's statement in which Dr. Mott refers to Mége any process for making the more perfect butter without the use of mammary pepsin.

C. Q. 60. Is Dr. Mott a chemist of ability and integrity?

A. He is.

C. Q. 61. You have referred to the first butter made by Paraf. Is this the butter referred to in your answer to direct question 3 as being the first butter prepared in this country?

A. It was.

C. Q. 62. Regarding the factory established by Paraf in 1873, concerning which you have testified, was it not the current publication in the papers of that year in substance that this factory was working upon a commercial scale and turning out one or two tons of butter daily, and have you not seen such publications in scientific papers of 1873?

A. I remember that much appeared in the newspapers during the fall of 1873 with regard to this subject, and that a stock company was being organized to put the matter into the form of a commercial enterprise. The only article which I remember to have stated that

it was in successful operation at this time, producing one or two tons per day, is the one which you exhibited to me yesterday, and which was published in the Scientific American in October, 1873.

270 C. Q. 63. In your answer to cross-question 37 you stated what, in your opinion, is the construction to be given to the first claim of the patent relating to the product. In the language "produced by treating animal fats so as to remove the tissues and other portions named" do you regard the word "treating" as meaning the treating as set forth in the patent?

A. I do; but also as including any substantial equivalent of the processes set forth in the patent.

C. Q. 64. You spoke on your direct examination of having examined oleomargarine. Have you ever analyzed the ordinary commercial oleomargarine oil made by the process of rendering at a temperature of about 120°?

A. I have examined it, but I have never made what would properly be called an analysis—that is, subdividing it into its component parts and examining these constituents individually; nor do I recollect having analyzed in this way any samples of any oleomargarine oil or butter. An elaborate series of analyses was made, however, at my instigation, by one of the chemists who acted under my directions, Prof. Caldwell, of Cornell University, in a recent investigation ordered by the State board of health, and the results of which were published in the second annual report of the State board.

C. Q. 65. Have you ever conducted personally an artificial digestion of animal fat when the temperature was not permitted to rise above 103°?

A. I have no recollection of ever having done so, but I cannot say positively.

C. Q. 66. Have you ever conducted an artificial digestion of animal fat at any range of temperature whatever?

A. I do not recollect having done so or having had any of my assistants do so under my observation.

C. Q. 67. Does Mége say anything in his patent about the "margarine" or oleomargarine oil produced by his process having the homogeneousness or the "consistency" of butter, and, on the contrary, does he not state that after it has been treated with mammary pepsin that "when the butter was cold and solid he

271 coarsely scraped it in order to pass it between two large cylinders which gave it the homogeneousness and the consistence which are the qualities of the natural butter?"

A. He does not speak of the margarine having the homogeneousness or the consistency of butter, and he does make the statement which you have quoted.

C. Q. 68. Which are the harder animal fats?

A. Mutton tallow is the hardest of the common fats. Next to that would come beef fat, and next to that lard, speaking generally. There are differences, however, in different individuals and in different parts of the same individual.

C. Q. 69. Which are known as the soft animal fats?

A. Some might call lard a soft fat. The fat of poultry and human fat are soft fats.

C. Q. 70. Mége's patent is entitled "Treating Animal Fats." This is not by its terms limited to beef fat, but it embraces other animal fats also, does it not?

A. In its title it is not in any way limited, but in the opening statement of the patent he speaks of artificially producing the natural work which is performed by the cow. In section IV he uses the term "soft fats proceeding from the slaughter-houses" in contradistinction to the "harder fats, such as mutton fat." I should infer from this language that he uses the term "animal fats" with special reference to beef fat, as that is the kind of fat the cow operates upon; also that he includes mutton fat, which he particularly mentions. Whether he intends to include pork fat or not does not appear in the language, as the term "soft fats" includes the beef fat, while he explains his term "harder fat" as referring to mutton fat.

C. Q. 71. Would you not "infer" from the language used that he mentioned mutton fat as an example of the harder fats, and that in his view his process was applicable to the harder fats—for example, mutton fat—and also to the soft fats?

A. There are practically only three fats to be had from the slaughter-house. The chief of these is beef fat, and it is evidently to the treatment of this fat that the patent aims, and that this is referred to in the term "soft fats." From his introduction of
272 the term "mutton fat" he evidently seeks to include this in his specification. No reference is made to the other fat of the slaughter-house, namely, pork fat, but he may have intended to include it in the term "soft fats."

C. Q. 72. Is it not the weight of later authorities that the cow secretes the milk by the lacteal organs directly from the food products?

A. I have not studied recent authorities on this subject very fully. All vegetable food contains fat, and it is probable that a transformation can be produced of the sugar, starch, and similar substances contained in the food by which an additional quality of fat is produced. These fats are either stored up in the adipose tissue entirely or they are partly oxydized or destroyed in the body or they are partly extracted by the lacteal glands and delivered in the form of milk by the female mammals.

Adjourned to Wednesday, December 12, 1883, at 8 o'clock a. m.

Met pursuant to adjournment on December 12, 1883, at 8 a. m.
Present: Same as before.

C. Q. 73. You stated in answer to direct question 6 that "I have frequently investigated oleomargarine and the more perfect butter thereof described in said patent, both synthetically, by making or supervising the manufacture according to the specifications of the patent, and analytically, by examining and causing to be examined under my directions the products," and in answer to cross-question

66 you state that you do not recollect having conducted an artificial digestion of animal fat at any range of temperature whatever or having had any of your assistants do so under your observation. How do you reconcile these two statements?

A. I do not consider the digestion with artificial gastric *use* an essential feature of the Mége process.

C. Q. 74. Then the testimony which you gave on the direct examination relating to the Mége process and product was based
273 upon the theory just stated by you, and was given without a personal knowledge on your part of the actual workings of the step of artificial digestion specified in the patent according to the definite directions given by Mége or of the results thereby produced?

A. No. This is hardly the case, as I saw the process of artificial digestion practiced by Paraf in his early experiments, and in speaking of the process I made no distinction in my own mind based either upon the use or the omission of the artificial digestion.

C. Q. 75. As your personal knowledge of the working of the artificial digestion of the fat is derived from what you saw of the process as conducted by Paraf, please describe in detail the incidents of this working as you observed them.

A. That I cannot do at this late day.

C. Q. 76. Then the knowledge you now have regarding the working of this artificial digestion is indefinite, is it not?

A. Indefinite to the extent that it would not be safe for me to undertake at this time to put on record the precise details of Paraf's experiments, but not indefinite as to the general facts. Paraf's first experiments were conducted, as I have already stated, in my laboratory. His subsequent experiments were conducted at his office and at his factory, and their details did not come under my observation.

C. Q. 77. Can you state whether Paraf conducted any of his experiments in your laboratory in accordance with the definite directions given in the Mége patent?

A. I cannot.

C. Q. 78. In answer to direct question 11 you mention some of the processes of rendering fatty substances which were known to you and which were worked prior to Mége, and mentioned in the literature relating to the subject. As bearing upon the subject I will read you the following from "The Domestic Encyclopædia," Philadelphia, 1803, vol. 2, page 492, article "Fat:" "The method of preparing fat for medicinal purposes is to remove all veins, skins, fibres, etc., when it is to be washed till the water comes from it perfectly insipid and colorless. After this preparation the fat is to be melted by a gentle heat with a small quantity of water till
274 the latter be evaporated; it is then to be strained off into an earthen vessel, when it will settle and be preserved from the air. When thus purified fat is almost totally divested of taste and smell."

Is not this an example of still another method of melting fat and one to be conducted at a gentle heat, and one producing a result or product having very different qualities from the results or products

mentioned by you in answer to question 11, as resulting from the processes there mentioned by you?

A. I do not see any essential difference between this process and the wet process which I described except that it is conducted with a little more care, and results in a product not as tallowy in character as is the product of wet rendering on a large scale, suitable for medicinal purposes, that is, for the preparation of ointments and salves. It is a very imperfect process for rendering, as after the fats are freed from such portions of veins, skins, and fibres as can be mechanically removed it is then melted with a little water and heated until this water is evaporated. This would involve considerable heat, although it is spoken of as a gentle heat. To drive the water out from under the melted fat and make it evaporate through a thick layer of fat such as there must have been from the proportions of fat and water in this case would require practically a temperature near 212°. As the water is evaporated, whatever soluble materials it might extract from the fat in the process of rendering would be left behind and again incorporated with the fat. The only process the writer relies upon for separating the finer membranous tissues is the final straining. That the fat thus stained is not pure is evident, that after it is put into an earthen vessel it will settle. As the water has been all evaporated, the only impurities that can settle in the earthen jar are the fine membranous tissues and other impurities which were not separated by the straining. The process is very carefully conducted at the beginning, as far as the removal of the coarser skins and fibres is concerned and the thorough washing. It is decidedly defective in the step which involves getting rid of the water by evaporation, and I think the product will be found to become rancid very soon after it is prepared.

275 C. Q. 79. Then, in a word, you would regard a temperature of 212°, mentioned by you, which would severely scald the hand, as meant by the term "a gentle heat?"

A. I should, taking in connection the object to be accomplished, namely, expelling the water from under the fat, and also bearing in mind the state of the art, which involved usually the use of a temperature much above 212° in the rendering of the fat by the common or dry process which I have already described.

C. Q. 80. I will also read you the following from Reese's "Cyclopædia," London, 1819, volume 34, article "Suet," also same article in "London Cyclopædia," London, 1829:

"Suet.—Mutton fat is the most consistent of real animal fats. It has some degree of brittleness, and requires a temperature of 127° Fahr. to melt it. In other respects it agrees with animal fats in general."

"Lard is inodorous, tasteless, and white, soft and nearly semi-fluid. Exposed to a heat of 97° it melts, and concretes again when cooled.

"The '*adeps failus preparatus*,' or prepared hogs' lard, of the Dub. Pharmacopœia, is had by cutting fresh lard into small pieces, then melting it by a moderate heat, and straining by pressing it through a linen cloth. Lard prepared by the dealers and preserved with salt is to be melted with twice its weight of boiling water, and well

stirring the mixture. It is then allowed to cool, when the lard may be separated. The above-mentioned processes are intended for purifying suet and lard, but in order to obtain them very pure they should be washed in water till the water comes off colorless, before they are melted.

"During the melting the remaining water is evaporated, and that this is the case may be ascertained by throwing a little of the melted fat into the fire, when it will crackle if any water remains. *The heat must not be raised above* 97°, *the melting point of fat*, because otherwise the fat is decomposed, rendered acrid, and assumes a yellow color."

The italics are my own.

Is there not here a recognition of the importance of conducting the rendering at a temperature as near as possible to the melting point of the fat, when it was desired to produce a very pure article?

276 A. There is a recognition of the importance of a low temperature in preparing mutton fat and lard for pharmaceutical purposes—that is, the preparation of salves and ointments; but the same criticism applies to this process as to the previous one. Getting rid of the water by evaporation is not a judicious plan. If it does not involve a high temperature it involves prolonged exposure to the air at a moderate temperature favorable to decomposition; at least sufficient to develop a certain amount of the tallowy taste and odor; insufficient, perhaps, to injure the fat for pharmaceutical purposes, but sufficient to ruin it as a butter product.

C. Q. 81. Was Reese's "Cyclopædia" published long prior to 1869?

A. It was

C. Q. 82. How do you explain the statement of Mége in one of the reissues of this patent, speaking of the oleomargarine oil produced by his process, that "it is composed like butter of oleine, margarine, and a little odoriferous oil?"

A. Mége found that his oleomargarine possessed the properties of butter. He knew that it contained oleine and margarine, and when he applied it to his tongue he found that to the taste, and unavoidably, to some extent, to the nose, as it is impossible to make one of these tests without making the other, he found that it possessed the flavor—that is, the taste and odor combined—of butter. This he attributed to an odoriferous oil. Most substances in nature owe their peculiar odors to odoriferous oils, and he inferred that the odor in this case was due to an oily body.

(Counsel for defendant here offers in evidence the various books, and in particular the passages quoted therefrom in the questions and answers in the foregoing depositions and in the deposition of Prof. Morton, referred to in the foregoing deposition.)

(Complainants' counsel objects to the above as incompetent, irrelevant, and not cross-examination.)

Complainants' counsel here rest, having completed their *prima facie*.

C. F. CHANDLER.

277 Subscribed and sworn to before me this 13th day of December, 1883.

V. S. LILLIE,
Notary Public, Kings County.

Certificate filed in New York county.

UNITED STATES OF AMERICA,
Southern District of New York, State of New York, City and County of New York, } ss:

I, Valencourt S. Lillie, a notary public for the county of Kings and State of New York, authorized by law to administer oaths and take depositions in the city and county of New York, and special examiner, do hereby certify that on the 15th day of November, 1883, and for the successive days thereafter in said depositions named, I was attended at my office, in the city of New York, by the counsel for the respective parties named in the notice heretofore annexed and by the witnesses, George B. Douglass, Edward G. Byrne, John Anderson, Charles H. Johnson, Washington Windsor, Henry Morton, and Charles F. Chandler, who were of sound mind and lawful age, and the witnesses were by me carefully examined and cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, and the depositions were reduced to writing by me or in my presence and in the presence of the said witnesses and from their statements, and after carefully reading the same to the witnesses they subscribed the same in my presence.

And I do further certify that I am not counsel or attorney for either of the parties in said depositions and caption named or in any way interested in the event of said cause named in said caption.

In testimony whereof I have hereunto set my hand and seal of office this 13th day of December, in the year of our Lord one thousand eight hundred and eighty-three, and of the Independence of the United States the one hundred and eighth.

[SEAL.]

V. S. LILLIE,
Notary Public, Kings County.

Certificate filed in New York county.

278 *Stipulation Entered into Between Counsel Relating to the Process or Method of Manufacture Followed by the Defendant, which Stipulation is Referred to in Several of the Depositions Appearing in this Record.*

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

It is hereby stipulated by and between the parties to the above-

entitled cause, represented by their respective counsel, and for the purpose of expediting the preparation and hearing of the above cause, as follows:

That the defendant in its factory first runs the fresh beef fat, which has been packed with ice during the preceding night, through a hasher, where it is thoroughly hashed and is comminuted, and then melts the hashed fat in a jacketed kettle at a temperature ranging from one hundred and twenty degrees to one hundred and thirty degrees Fahrenheit, the fat being thoroughly agitated by mechanical stirrers while melting and salt being mixed with the fat while it enters the kettles, and then, when settled, the melted fat is drawn off into other kettles, when the temperature is raised about five degrees and maintained about three hours, when the fat is put into seeders, which are kept in a room at a temperature of eighty-four to eighty-six degrees, until it granulates and thickens. Then the stock is put into cloths holding three pounds each in a flat cake seven by ten inches and one inch thick. Eight of these are placed on an iron plate, and then an iron plate in alternation to seventy-five rows of cakes and plates, and put into a press. Then the oil is squeezed out by pressure in the press and runs into a tank,
279 from which it is pumped through pipes into a kettle in the same room and temperature, where it remains several hours, and is run into tierces.

This stipulation does not prevent the consideration or introduction of evidence by either party relating to the subject-matter thereof not inconsistent with the contents hereof.

That the complainants are to finish and complete at once and at this sitting in New York all their testimony, *prima facie*, and that the defendant is to use its best effort and endeavor to put in and complete its rebuttal within sixty days thereafter.

New York, November 21, 1883.

OFFIELD & TOWLE,
Comp'ts' Sol'rs.
HILL & DIXON,
Def't's Sol'rs.

280 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

At the city of New York, in the county and State of New York, on this 25th day of August, A. D. 1884, at 2 o'clock p. m., before me, Asa F. Smith, a notary public for the State of New York, in and for Kings county (with a certificate filed in the office of the clerk of New York county), duly commissioned, at the office of James Wilson, No. 32 Beaver street, pursuant to notice attached.

Present: C. K. Offield, Esq., on the part of the said complainants, and T. S. E. Dixon, Esq., on the part of said defendants.

And thereupon the following proceedings were had in said cause before me.

Examination adjourned to August 26th, at 2 o'clock p. m., at same place.

AUGUST 26TH.

Examination further adjourned to August 27th, at 2 p. m., at same place.

AUGUST 27TH—2 p. m.

Counsel present as above.

Examination continued; and thereupon complainants call HENRY A. MOTT, Jr., as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories propounded by C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. Henry A. Mott, Jr.; New York city; age, thirty-one years; occupation, analytical chemist and professor of chemistry in the New York Medical College.

281 Q. 2. Do you know Professor George F. Barker, of the Pennsylvania University; and, if so, how long have you known him?

A. I do, and have known him for about seven years.

Q. 3. Are you familiar with the handwriting and signature of Professor Barker so that you would know and would recognize the same?

A. I feel confident that I am.

Q. 4. Please look at the three papers now shown you and state in whose handwriting these papers are, both as to the body of the papers and the signatures affixed thereto.

(Objected to as incompetent because sufficient foundation for the question has not been laid.)

A. I am satisfied that the papers referred to were written by Professor Barker and have attached to them his signature.

(Complainants' counsel here offers in evidence the three papers identified by the witness, and requests the notary to identify them, respectively, with this record and mark the same "Complainants' Exhibits Barker Letters Nos. 1 and 2" and "Barker's Statement No. 3.")

(Objected to as immaterial, irrelevant, and incompetent.)

Witness says: "I should have more explicitly stated that the two letters had Professor Barker's signature attached to them instead of including all the papers."

Q. 5. Are you the Dr. Mott referred to in Complainants' Exhibit Barker Letter No. 1?

A. I am.

Q. 6. Did you, in behalf of the United States Dairy Company or its successor, "The Commercial Manufacturing Company, Consoli-

dated," retain Professor Barker and pay him a retainer under the Hippolyte Mége patent, then owned by either the one or the other of such companies?

(Objected to as immaterial.)

A. I did retain Professor Barker for the company owning the said patent.

Q. 7. Did you retain him under and in behalf of the Hippolyte Mége patent?

282 (Same objection, and also because leading.)

A. It was on behalf of the Hippolyte Mége patent that I retained Professor Barker.

Cross-examination by T. S. E. DIXON:

C. Q. 1. What is referred to in Complainants' Exhibit "Barker Letter No. 1" as an affidavit, the same which the company afterwards printed and was the certificate of Prof. Barker, which was printed and offered in evidence in this record, was it?

A. I have reason to believe it was.

C. Q. 2. Are you the Prof. Henry A. Mott, Jr., who read before the Chemical Society of the City of New York a report on the "manufacture of artificial butter," and which was printed in the Scientific American supplement, November 25, 1876, vol. II, No. 48, pp. 760 and 761, and an extract from which report is given in cross-question 51 in the deposition of Prof. Chandler in this record?

(Objected to as not cross-examination, and complainants' counsel instructs the witness that he is at liberty to refuse to answer any questions except such as refer to the subject-matter of the direct examination, and further instructs him so to do.)

A. By the instruction of counsel I refuse to answer the last question.

(Counsel for defendants states that he has a right to ask the question in cross-examination as bearing upon the relations of the witness with the United States Dairy Company referred to in the direct examination, and, moreover, the witness having been placed upon the stand, counsel for defendants, as is well known to counsel for complainants, has the right to make the witness his own and examine him upon any points pertinent to the issues involved in the case, and therefore the question is repeated.)

Question repeated.

(Complainants' counsel recognizes no such right as asserted in the above statement of defendants' counsel and respectfully sug-
283 gests that the time has expired for defendants to "make witnesses their own" and for examining their own witnesses, and respectfully declines to allow any portion of their time to be so appropriated by defendants' counsel, and again instructs witness to decline to answer the above and all other questions which do not refer to the subject-matter of the direct examination.)

A. I decline to answer.

(Counsel for defendants here gives notice that at the hearing he will object to this deposition being considered and move to strike out the same because of the refusal of the witness to answer the above question under the express instructions of counsel for complainants.)

C. Q. 3. Professor Mott, you still adhere to the pointed opinions regarding the Mége patents, processes, and products expressed by you in that report, an extract from which is given in cross-question 51 of Professor Chandler's deposition, do you?

(Previous instructions to the witness renewed and the so-called interrogatory of defendants' counsel objected to as assuming a fact nowhere testified to in this record, and defendants' counsel is requested to proceed with his cross-examination, if he has any to make.)

(Counsel for defendant refers counsel for complainants to cross-question 51 in Professor Chandler's deposition and to the offer in evidence at the close of Professor Chandler's deposition.)

A. I refuse to answer the question.

(The above objection and notice repeated.)

HENRY A. MOTT, JR.

Sworn to before me August 27, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed in New York county.

Further examination adjourned to August 28th, at 11 a. m., same place.

284 AUGUST 28TH.

Met pursuant to adjournment.

Counsel present as before.

And thereupon complainants' counsel call CHARLES D. DESHLER as a witness in their behalf, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, occupation, and residence.

A. Charles D. Deshler; sixty-five years of age; secretary of the United States Dairy Company and of the Commercial Manufacturing Company, Consolidated; I reside at New Brunswick, New Jersey.

Q. 2. Were you secretary of the United States Dairy Company during the entire year of 1880 and during the entire years of 1881 and 1882, and also of the Commercial Manufacturing Company, Consolidated, during the years of 1881 and 1882?

A. I was.

Q. 3. During the year 1880, and prior to the first day of March of that year, how many suits, if any, did the United States Dairy Company have pending under the Hippolyte Mége patent then owned by that company in the United States?

(Objected to as immaterial.)

A. I can now recall some six or seven.

Q. 4. How many of these suits, to your recollection, were then pending in the United States circuit court for the southern district of New York?

(Same objection.)

A. Five.

Q. 5. Was the case against Schwartzchild and Sulzberger one of these five suits?

(Same objection.)

A. It was.

Q. 6. Please look at these three papers now handed you, marked respectively "Complainants' Exhibit Barker Letters No. 1 and 2 and Barker Statement No. 3," and state whether these ex-
285 hibits came into your hands as secretary for the United States Dairy Company and the Commercial Manufacturing Company, Consolidated.

(Same objection.)

A. They did.

Q. 7. Did they come into your hands respectively at or about the dates indicated at the head of the exhibits?

(Same objection.)

A. The one marked No. 1 came into my hands on the 13th of June, 1882, three days after the date of the letter, which is June 10, 1882, and accompanying it was the statement marked "Barker Statement No. 3," dated June 10, 1882; the other Barker letter, No. 2, dated June 15, 1882, was received the day after or on the 17th of June.

Q. 8. Please state whether or not these several exhibits have been in your hands continuously as secretary ever since the date of their reception.

(Same objection.)

A. They have been until they were brought into this case yesterday.

Q. 9. Did you, as secretary, reply to those letters?

(Same objection to this and all other questions relating to the subject-matter inquired into.)

A. I did.

Q. 10. Have you the duplicate originals of your replies in the shape of letter-press copies?

A. I have.

Q. 11. Please look at the two papers which I now hand you and state what they are.

A. Generally, they are replies to these letters of Professor Barker, of which I have referred to in my reply to a former question. More specifically, the letter dated June 13, 1882, was in reply to his letter to Mr. James Wilson, and in which I stated that Mr. Wilson had just handed me Professor Barker's note to him of the 10th, enclosing a bill for professional services. After stating the reasons for the apparent neglect in paying the bill, the letter goes on to say that we will forward check for the amount of the bill upon the return of the treasurer to the office, which we expected would be the next day.

The other letter, dated the 14th of June, 1882, was one from
286 me as secretary advising him of the enclosure of a check for the amount of his bill rendered—two hundred dollars.

(Complainants' counsel here offers in evidence the letter-press copies just identified by the witness and requests the notary to attach the same to this record and mark the same "Complainants' Exhibits Deshler Reply Nos. 1 and 2."

Objected to as immaterial, irrelevant, and incompetent.

Exhibit marked as above.)

Q. 12. Please state whether or not you directed the originals of these two exhibits, with postage prepaid, to the direction indicated in these exhibits, namely, Professor George F. Barker, University of Pennsylvania, Philadelphia, Pa., and at the dates indicated in these exhibits.

A. I did so direct, prepay, and mail them at the dates indicated in the letters.

Cross-examination by Mr. DIXON:

C. Q. 1. When did you first become secretary for the old United States Dairy Company?

A. In January, 1877.

C. Q. 2. Had you been connected in any way with the parties controlling the Mége patent prior to that time?

A. I had not.

C. Q. 3. You have referred to a number of suits brought upon the Mége patent in the United States circuit court for the southern district of New York. Were any rulings made by said court upon the Mége patent in any of those causes or was any decision made upon a contested motion for a preliminary injunction in any of said causes?

(Objected to as not cross-examination and for the reason that the record of the court is the only or best evidence of such rulings, if any.)

A. I hardly understand the technical words there used, but there was a refusal to grant a preliminary injunction in one of those cases by the judge of the court.

287 C. Q. 4. After this decision by Judge Blatchford the complainants ceased the prosecution of those cases and never brought them to a final hearing?

A. They did not cease the prosecution, but the cases were continued with the expectation to bring them to a final hearing.

C. Q. 5. But although this was a number of years ago none of them have ever been brought to a final hearing, have they?

A. No.

C. Q. 6. Can you say that as a matter of fact they have not been dismissed?

A. I cannot say either that they have or that they have not; I don't know.

C. D. DESHLER.

Sworn to before me August 28, 1884.

ASA F. SMITH,
Notary Public, Kings Co.

Certificate filed in New York county.

Adjourned to August 29th, same hour and place, 11 a. m.
Present: Same as before.

AUGUST 29TH.

Further adjourned to August 30th at 11.30 a. m., same place.

Present: As before.

AUGUST 30TH.

Further adjourned to September 1st at 2 p. m.

SEPTEMBER 1ST.

Further adjourned to September 2d at 2 p. m.

SEPTEMBER 2D.

Further adjourned to September 3d at 2 p. m.

SEPTEMBER 3D.

Further adjourned to September 4th at 2 p. m.

SEPTEMBER 4TH.

Further adjourned to September 5th at 12.30 p. m.

288 SEPTEMBER 6TH.

Further adjourned to September 6th, at Astor House, room 226, at 11.30 a. m.

SEPTEMBER 6TH.

Met pursuant to adjournment.
Counsel present as before.

SEPTEMBER 9TH.

Met pursuant to adjournment.
Counsel present as before.
Counsel for defendant consents that the cross-examination of

Professor Morton may be interrupted to take the deposition of the watchman, Martin Pendleton, and also the direct examination of Professor Wheeler, but he reserves the right to cross-examine Professor Wheeler after he shall have concluded the cross-examination of Professor Morton.

Complainants called MARTIN L. PENDLETON, who, being duly sworn, testified as follows:

Q. 1. Please state your name, age, residence, and occupation.

A. Martin L. Pendleton; thirty-two years of age last March; residence, Brighton, Massachusetts; occupation, night watchman for Commercial M'f'g Company.

Q. 2. How long have you been night watchman of the Commercial Manufacturing Company and where are the works situated?

A. I have been there most three years—night watchman—very near. The works are situated on North Beacon street, Brighton, Massachusetts.

Q. 3. What is the business of that corporation?

A. Making oil.

Q. 4. State briefly how it makes its oil.

(Objected to as wholly immaterial and incompetent, and the same objection is made to all other questions upon the same subject-matter.)

A. First, we put our fat into clean cold water, and it remains there till the animal heat is entirely gone, then we trim out all but the pure fat, then it is taken upstairs and hashed through the hasher, from the hasher it goes into a jacketed kettle. There are paddles in that
289 kettle that revolve all the time and stir the fat constantly. That kettle is kept to the temperature of 120° F. It takes about two hours to render that kettle into oil. As we hash this fat we use salt with it. After it becomes oil it remains in the kettle an hour and a half, so that the scraps will all go to the bottom. Then the kettle is skimmed; then drawn into a smaller kettle below. I don't know exactly the temperature that they heat that oil to in the lower kettles, but I know the temperature that they draw it off at into the coolers. It is 130 F. It is drawn into coolers and remains there thirty-six hours, in a room that the temperature of is kept at 84° to 86° F. Then it is taken to the presses; put into cloths; the cloths are folded to the size of from eleven to twelve inches in length and from four to five inches in width and about from one-half to one inch thick; then they are placed in presses, sixteen in number, on a plate; then another plate is dropped onto that and so continued until the press is full; then I start my hydraulic pumps till I get the pressure of three hundred and sixty-five tons to the square inch. That is all I know about making this oil. That's the process we go through with to make this oil.

Q. 5. What has been your duty as night watchman for the past three years, so far as the making of this oil is concerned?

A. To receive all fats and see that they are sweet and clean and see

that they are properly taken care of, and to keep the temperature of the room between 84° and 86° Fahrenheit.

Q. 6. What room?

A. The press-room—the seeding-room; we call it the press-room. It's where we do our pressing and keep our oil or product. This is my orders from R. W. Reed, the superintendent, at night, when he leaves the place of business.

Q. 7. What is the reason that you kept this seeding-room at a temperature of from 84° to 86° Fahrenheit?

(Same objection, and also because the night watchman is obviously incompetent to testify as an expert.)

A. Well, now, to make that plain will say, so that the product will be in condition to press.

290 Q. 8. What is the practical result if the product cools down in the seeding-room to below 84° Fahrenheit, say to 79 or 80° Fahrenheit?

(Last objection repeated.)

A. The product becomes packed hard like cheese; then it has to be taken upstairs and melted over again; it has to go through the same process as I first stated.

Q. 9. What happens practically if you attempt to press the product at a temperature somewhat above 84 or 86° Fahrenheit, say 90° Fahrenheit?

(Same objection.)

A. The stearine goes into the oil and we cannot get good, pure oil.

Q. 10. What hurt does this extra stearine do practically in the oil, so far as you know?

(Same objection.)

A. It makes the oil become hard.

Q. 11. Were you night watchman in the factory of your company last Wednesday and Thursday nights?

A. I was.

Q. 12. Who, if anybody, gave you particular charge and instruction as to the temperature in which the seeding-room should be kept on Wednesday and Thursday nights last?

A. Well, I will state here that I don't know the gentleman's name, only by sight. I never was made acquainted with him.

Q. 13. How many gentlemen were there who gave you particular instructions as to the temperature at which the seeding-room must be kept on Wednesday and Thursday nights last—that is, the nights of the third and fourth inst.?

A. Two.

Q. 14. Are these the two gentlemen present—Professors Wheeler and Chittenden?

A. Yes; they are.

Q. 15. At what time in the evening of the third and fourth

instant did they turn over this seeding-room to you, and what time did you turn it over to them again in the morning?

A. Wednesday night at 9.30. Thursday morning I left
291 the room in the charge of the gentlemen at 8 o'clock. Thursday night, I should say at about the same time—9.30. I was relieved Friday morning by the gentlemen, or professors, at about 8 o'clock.

Q. 16. At what temperature did you keep this seeding-room during Wednesday and Thursday nights, as you have testified?

A. Between 84° and 86° F.

Q. 17. How fine is the fat hashed at your establishment when it goes into the kettle?

A. To a very fine pulp.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. What kind of an implement do they use when they slice off the cakes which are put into the cloths from the mass in the seeding-boxes?

(Objected to as assuming that they use any instrument or slice off any cakes in the seeding-room.)

(Counsel for defendants protests against this interference for the obvious instruction of the witness, who has just remarked that they use a knife.)

A. I used a knife at some points.

C. Q. 2. Why did you use a knife in preference to anything else?

A. It is easier to handle the oil or product.

C. Q. 3. Why did they cut this into cakes varying only from half an inch to an inch in thickness instead of having them thicker in the cloths?

(Objected to because it assumes that the product is cut into cakes, when the witness has testified substantially that it is taken out in cloths.)

(Counsel for defendant again protests against this interference with the cross-examination for an obvious purpose.)

(Counsel for complainants call the attention of the court to this continuous attempt of defendant's counsel to misrepresent and pervert the testimony of this witness.)

(Counsel for defendant denies that there is any attempt to pervert the testimony of the witness, and requests the witness to state the facts just as they are.)

292 A. You cannot press it and get the oil as it should be from any thicker cakes.

C. Q. 4. Please describe just how the knife was used in connection with the cloths in cutting off the cakes from the mass in the seeders and putting them into the cloths and folding them.

A. I don't see how I could any plainer than I have, without I have the oil here and the coolers to do it with.

C. Q. 5. But this must be read to the court; but they, of course, will not have the tools before them; therefore I ask you to describe the

operation as well as you can, so that they will be able to understand how it was done.

A. I think I have described it as clear as I possibly could before, in just a statement; I know I have.

C. Q. 6. Well, tell us again how the knives were used and how the cloths were folded.

A. I think once is sufficient.

C. Q. 7. Why do you refuse to tell us how the knife was used or how the cloths were folded on the cakes?

(Complainants' counsel objects to this continued misrepresentation of the witness and the attempting to put in his mouth words and statements which he has not used, namely, that the cloths were wrapped around the cakes, or that there was anything of a cake nature in this product of the seeding-room.)

Counsel for defendant again protests against this repeated interference with the cross-examination, which has had the designed effect of silencing the witness when he is asked to tell the facts, and refers to the use of the word "cakes" by the witness in his answer to C. Q. 3.

A. I think I have, as plain as I know how.

C. Q. 8. On your direct examination you were ready to impart information about the details of the process. I will ask you once more and for the last time, How was the knife used? What was done with it in getting the product from the seeders into the cloths ready for the press?

A. Ask me one question at a time, if you please.

C. Q. 9. I will humor you, and ask you once more, What was done with the knife in getting the product from the seeders into the cloths ready for the press?

293 A. I have explained that as near to my knowledge as I positively could. I can't do any different, upon my honor.

Further cross-examination of the witness declined for obvious reasons.

Redirect examination by Mr. OFFIELD:

Q. 1. Who is the superintendent of the factory and has been the superintendent during the last three years, while you were night watchman?

(Objected to as immaterial and as incompetent redirect examination.)

A. R. W. Read.

Q. 2. Is this oil or product removed from the seeders into the cloths and pressed during the day or night time?

A. Daytime, and sometimes in the first part of the evening—that is to say, when we have more than we can do in the daytime.

Q. 3. Will Mr. Read know exactly the condition of the oil and the exact manner in which it is removed from the seeders and placed in the cloths?

(Same objection, and also because frivolous.)

A. Yes, sir; he does.

MARTIN L. PENDLETON.

Sworn to before me September 9, 1884.

ASA F. SMITH,
Notary Public, Kings Co.

Certificate filed in N. Y. Co.

Complainants recall MARTIN L. PENDLETON:

Counsel for defendants enters a protest against this method of procedure, and against any testimeny relating to the subject-matter in the deposition just signed by the witness, especially as counsel for complainants said to the witness immediately after he had
294 signed his deposition, "I want to see you a moment," taking the witness out into the hall, and now returning with him and placing him again upon the stand, instead of asking the questions intended on the redirect examination, when he had full opportunity.

Counsel for complainants states that he permits the recalling of this witness at the request of the witness himself, and, further, for the reason that he believes that the witness was misled by defendant's counsel as to the intention and purport of the cross-examination by a side conversation which defendant's counsel forced upon the witness while he was on the stand, and which does not appear in this record, during a few moments when complainants' counsel was necessarily absent from the room.

Counsel for defendant states that he asked no question of the witness relating to this subject-matter which does not appear at length upon the record, and he repeats his objection to any further testimony on the part of the witness under the circumstances.

Q. 1. Did the defendant's counsel here present begin talking to you about a knife (when I went out of the room a few minutes) in a side conversation before your cross-examination began?

A. Yes; he did.

Q. 2. In your cross-examination, when you spoke of a knife being used in any instance in the establishment of your employer, what knife did you refer to and who used by?

A. By this professor here (pointing to Professor Wheeler.)

Q. 3. To your knowledge, has a knife ever been used by your employer, the Commercial Manufacturing Company, in any way to cut up or remove that oil or product from the seeders to the cloths?

A. There has not.

Q. 4. What do your employers, the Commercial Manufacturing Company, use in their actual manufacture to remove the product from the seeders into the cloths to be pressed?

A. I'll explain the method as near I possibly can: We
295 used a scoop that will hold about two pounds and a half of product, I should judge, to take the product from the seeders or coolers and place it in the cloths to be folded.

Q. 5. In what manner is any shape given to these cloths containing the product scooped from the seeders in the practical manufacture by your employers?

A. They are twelve inches long and four inches wide, and about one-half to an inch in thickness.

Q. Well, how do these cloths get in that shape with the product in them? What, if anything, are they put into to make the cloths take that shape before they go into the press?

A. They are put into a box made especially for them, the cloths.

Q. 7. Does the box containing these cloths go into the press?

A. Nothing but the cloths and product go into the press.

Q. 8. What is the only purpose of this box?

A. For folding those cloths into that shape.

Recross-examination:

C. Q. 1. I will only ask you a personal question: Was not the single and the only question I asked you when counsel for complainants was out of the room, as follows: "What kind of an implement do they use when they slice off the cakes which are put into the cloths from the mass in the seeding-boxes?" and which was afterwards written down by the notary.

A. You asked me that question.

C. Q. 2. And did you not reply "They used a knife?"

A. In regard to "they," not knowing what parties "they" meant. I answered a knife, not knowing whether it was the professors that were there or the way that R. W. Reed should have the product removed from the seeders.

C. Q. 3. That is all (by defendant's counsel).

MARTIN L. PENDLETON.

Sworn to before me September 9, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed — New York county.

296 SEPTEMBER 10, 1884.

Parties met pursuant to adjournment.

And thereupon counsel for complainants calls REUBEN W. REED, who, being duly sworn, deposes as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Reuben W. Reed; age, fifty-nine; residence, Allston, Boston, Massachusetts; occupation, manufacturer of oleo, superintendent of the Commercial Manufacturing Company of Massachusetts.

Q. 2. Is your company a Massachusetts corporation, and is it connected in any way with the Commercial Manufacturing Company, Consolidated, one of the corporation complainants in this suit?

A. We are a Massachusetts corporation. It is not connected in

any way with the Commercial Manufacturing Company, Consolidated.

Q. 3. Please state whether or not your company holds a license from the New York Commercial Company to manufacture its product under the Hippolyte Mége American patent sued upon.

A. We do.

Q. 4. How long have you been superintendent of the Massachusetts Commercial Company? And please state, briefly and concisely, the process you have of producing your product under your license.

(This and all other questions relating to the subject-matter enquired into objected to as immaterial, irrelevant, and incompetent, and also as not rebuttal.)

A. I have been superintendent of the company since its organization. I think it will be four years next December. First, we render the fats at a low temperature, then run the oil into cooling or seeding tanks and there let it remain some thirty-six hours in a room with a temperature of from 84° to 86° F.; then we put it into cloths and it goes to the press. It is limpid, so we can fill it with a
297 scoop into the cloths to go to the press. There we press the oil from the stearine. The oil flows into a tank, where it remains several hours, when it is drawn into the tierces. In rendering this oil at a low temperature in the kettle, after it is rendered it stands about an hour in those kettles. Then it is drawn into smaller kettles, the temperature raised some six or eight degrees. It is gradually cooled down in those kettles, and settles some two hours before drawing it into the coolers or seeding tanks.

Q. 5. Please describe a little more particularly the condition of the fat when it goes into the melting kettles to be melted and at what temperature the melting of the fat and the separation of the oil from the tissue is carried on by your company and the kind of kettles you do this in.

(Same objection.)

A. We first receive the fat and put it into tanks of water, where it is thoroughly cooled, the water being changed and the blood washed from the fat. It is then thrown onto benches; any meaty substance or anything pertaining to the fats not perfectly of a fatty nature trimmed off. It is then cut into small strips, placed in jiggers, run up to the large kettles in the hashing-room. There it goes through hashers. From them it runs into large kettles to be rendered. These large kettles are steam-jacketed kettles. We get a separation of the oil from the tissues at 120° F. That is the temperature inside that we render the fat.

Q. 6. In what condition is the fat when it falls from the hashers into the kettles? I mean as to being thoroughly broken up into pulp, or is it in small pieces or chunks?

(Same objection.)

A. It is hashed to a fine pulp. The fibre is thoroughly broken.

Q. 7. Please state whether or not the fat is stirred while melting or anything thrown into the kettles.

A. It is constantly stirred or agitated until thoroughly melted. Salt is put in as the hashing goes on.

Q. 8. You have testified that you keep the room where the product is seeding or in the seeders at a temperature from 84° to 86° Fahrenheit. Why do you do this?

298 (Same objection.)

A. To get the best results from the temperature or it produces the best results.

Q. 9. What happens if the temperature falls a few degrees lower than 84° Fahrenheit in the seeding-room?

(Same objection.)

A. It doesn't seed or granulate well; it becomes "packed," as we term it, and solid, and has to go through the kettles again and be melted over.

Q. 10. Why don't you slice this product up with a knife into slices half an inch or an inch thick instead of melting it over, and then wrap it in cloths and press it between hot or warm plates so as to separate the oil and the stearine?

(Same objection.)

A. I don't think it could be done and get good results; in heating the plates we should get the melted stearine with the oil.

Q. 11. Have you ever tried to heat up these sliced cakes and separate the oil from the stearine by means of hot or warm plates?

(Same objection.)

A. I assisted in trying some; once only.

Q. 12. What would be the result if you attempted to separate the oil and the stearine in the presses at a temperature a little higher than 84° Fahrenheit or 86° Fahrenheit?

(Same objection.)

A. As you run up your temperature above 86° Fahrenheit, you get the stearine in the oil in proportion as you run up your temperature.

Q. 13. Have you ever removed the product from the seeding tanks in your factory and placed it in the cloths or bags in any other way than by a scoop or ladle, and pressed in any other way than at a temperature of both oil and plates of about 84° or 86° Fahrenheit?

(Same objection.)

A. Never in any way only as an experiment.

Q. 14. What kind of fats do you use?

(Same objection.)

A. Beef.

299 Q. 15. Was it at your factory that Professors Morton, Wheeler, and Chittenden made certain experiments last week? And, if

so, please state whether or not, so far as you were able to judge, those experiments were carried out faithfully and carefully.

(Objected to as leading.)

A. Those gentlemen were at our factory last week, and to the best of my knowledge and belief they were carried out faithfully. They were very devoted to their work, staying there all night; some of them wouldn't leave it a moment.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. You have stated that your company holds a license under the Mége patent. Is it not a fact that, in common with the other former licenses, your company has for some time refused to pay the contract license fees?

A. Never refused to my knowledge.

C. Q. 2. Do you know of your personal knowledge about this?

A. No; I am not the treasurer.

R. W. REED.

Sworn to before me September 10, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed in New York county.

Adjourned to September 15, at 10.30 a. m.

September 17, met pursuant to adjournment.
Counsel present, as before.

And thereupon complainants' counsel calls HERMAN KNUBEL, who, being first duly sworn, testifies as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Name, Herman Knubel; age, thirty-two; residence, 210 West 24th street, New York city; by occupation I am a commission agent.

300 Q. 2. Were you ever acquainted with the New Jersey Dairy Company, its president, Harrington, and its superintendent, John Tenney, engaged in rendering of fats near or in Jersey City?

A. Yes, sir.

Q. 3. Did you ever get into their factory or establishment so as to see and know, at least to a certain extent, steps of their process in rendering animal fats; and, if so, when did you enter their factory and obtain this knowledge?

(This and all other questions relating to said New Jersey Dairy Company objected to as wholly incompetent in rebuttal, testimony at length upon this subject having been given by one of complainants' very first witnesses in its *prima facie* case, and no testimony having been taken by defendant upon the subject.)

(Moreover, further objection is made that complainants are bound by the testimony of their witness and cannot contradict the same.)

A. Yes, sir; I did; on about the first of March, 1874.

Q. 4. How long had the New Jersey Dairy Company been running or in operation rendering animal fats at the time you entered their factory, March first, 1874?

(Objected to also because it does not appear that the witness has personal knowledge upon the subject, he having only "got into their factory" on an occasion about the first of March, 1874.)

A. About a month or six weeks, to the best of my recollection.

Q. 5. How long and how intimately had you known John Tenney, the superintendent of the New Jersey Dairy Company?

A. Some time prior to his connection with the New Jersey Dairy Company he resided with his relatives, who were near neighbors of mine and intimate friends of my family, and our relations were such as a social connection of that kind would most naturally bring about. He was a visitor at my family's.

Q. 6. Did you have any difficulty in getting into the factory of the New Jersey Dairy Company, and by whose influence did you enter it?

301 A. I entered it by permission of Mr. Tenney, who at that time was superintendent, and for the reason that I was about starting a similar factory in Canada. He granted me permission to examine his works because of the reason that I was to prosecute the business out of the country and because of our social relations.

Q. 7. How many times were you in the factory of the New Jersey Dairy Company at Jersey City during the month of March, 1874?

A. Probably six or eight times.

Q. 8. Was the business of rendering fats carried on by the New Jersey Dairy Company in March, 1874, carried on secretly, so that outsiders could not witness it, or openly to the public?

A. To the best of my recollection it was carried on secretly. It took some influence to obtain admission to the factory.

Q. 9. Under what patent process or license, if you know, did the New Jersey Dairy Company render their fats?

(Objected to also because it does not appear that the witness has personal knowledge on this subject.)

A. Under the Paraf patent they had bought a license for New Jersey and had paid five thousand dollars on account.

Q. 10. Without asking you to describe in detail the process used by the New Jersey Dairy Company in rendering their fats, I will ask you to state in what kind of a vessel they rendered them and by what kind of heat.

A. In open wooden tanks and by direct steam.

Q. 11. Do you mean jacketed wooden tanks with live steam turned direct upon the fat?

(Same objection as to question 3, and also because leading.)

A. I do.

Cross-examination declined.

HERMAN KNUBEL.

Sworn to before me September 17, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed in New York county.

302 And thereupon complainants call JOHN D. PECK, who, being first duly sworn, deposes as follows:

Q. 1. Please state your name, age, residence, and occupation.

A. My name is John D. Peck; age, fifty-five; superintendent of Rafferty & Williams' rendering establishment of New York city; I reside at South Brooklyn.

Q. 2. How long, if at all, have you been engaged superintending the production of oleomargarine oil, and how many pounds of oleomargarine oil have you personally superintended the production of during that time?

A. Since the first of November, 1876, I have supervised the melting of over fifty million pounds.

Q. 3. At what temperature have you seeded or crystallized this oil, and what is the necessity, if any, for such temperature in uniform crystallization?

A. At an average temperature of 85° F. for getting a perfect crystallization and the separation of the oil from the stearine.

Q. 4. What happens if the oil crystallizes at a temperature, say, four or five degrees below 85° and you attempt to press it, or you attempt to press it at a temperature, say, of 90° F.?

A. At a decreased temperature it becomes stocky and won't yield; at an increased temperature the stearine absorbs the oil and goes with the oil.

Q. 5. Is it practical to produce a salable commercial quality of oleomargarine oil by the separation of the oil from the stearine by means of hot or warm plates, no matter at what temperature it may have crystallized, and do you speak from actual knowledge, gained by practical personal efforts in this direction?

A. I should say it was not from experience.

Cross-examination by T. S. E. DIXON, Esq.:

C. Q. 1. The last question refers to "hot or warm plates." As you conduct the process do you not have the plates which you use in the press heated up to eighty-five or eighty-six degrees F., whether
303 it be summer or winter, and the entire atmosphere in the room kept at that degree of heat?

A. The room is kept at a temperature of eighty-five degrees. The plates are kept in the same room, from the fact if the plates were colder the stock in the bags or cloths would chill, checking flow. If increased heat it would cause the crystal stearine to unite with oil and flow with it, injuring the product of oil.

C. Q. 2. After the product has stood in the seeders till it is ready for the press you call it by the term "stock?"

A. Yes, sir.

C. Q. 3. Describe the character of this mass of stock.

A. This stock is brought from the settling kettles, placed in coolers put in seeding-room, standing until crystallization is perfected, when perfect put to press.

C. Q. 4. Describe this crystallization. What is its appearance? Is it a granular mass?

A. As the stock commences to seed it crystallizes, the crystals settling at the bottom until it is of a granulated mass and when fit pressed.

C. Q. 5. What do you mean by "when fit?"

A. Different fats seed different, so that all fats do not seed alike. I mean when granulation has perfected.

C. Q. 6. You say until it is a granulated mass. Is this mass thickened so that you can handle it with a scoop in putting it into the cloths?

A. Yes, sir.

C. Q. 7. Tell us, as near as you can, about how thick this granular mass is.

A. It is a pulpy consistency, irregular in its texture, from the fact that some fats yield more oil than others. The larger the percentage of oil the thinner the consistency.

C. Q. 8. You say different fats seed different. Do you call lard a soft or hard fat and do you call tallow a hard or soft fat?

A. As regards lard, leaf is a soft fat; the back fats are hard fats. I call beef fat for all purposes a soft fat.

C. Q. 9. Do you call tallow a hard or soft fat?

A. Tallow is a product of beef fats, of suet and other fat combined. The suet of tallow I call a hard fat.

304 C. Q. 10. The suet of tallow is the fat with the membrane removed, is — not?

A. No, sir.

C. Q. 11. What is it, then?

A. The suet of the beef creature is the fat in which the kidney is encased.

C. Q. 12. Then, as you have meant to be understood, the suet is fat with the tissue in it, instead of being removed?

A. I can give you no enlightenment on suet, for I never handled any for oil purposes.

C. Q. 13. You say all fats do not seed alike. What different fats do you use that seed differently?

A. Steer fat, both grass and grain fed.

C. Q. 14. You say, "This stock is brought from the settling kettles, placed in coolers." Why do you call them "coolers?"

A. It comes in from the settling kettles at about a temperature of from 120° to 125° and is placed in the seeding-room at a temperature of 85° F.; by gradually cooling to 85° it perfects itself into crystallization.

C. Q. 15. Did Rafferty and Williams make this fifty million pounds of oleomargarine under any patent or independent of any patent?

A. No, sir; I don't know that Rafferty and Williams ever worked under a patent.

Redirect:

Q. 1. The last question assumed as a fact; and while your answer does not explain that Rafferty and Williams made this fifty million pounds of oleomargarine oil which you superintended, did you mean to be so understood?

A. I don't mean to be understood that Rafferty & Williams made it.

Recross-examination:

C. Q. 16. What did you mean, then?

A. I mean the fifty million pounds is fat, not oil.

305 Re-redirect:

—. How many pounds of oleomargarine oil will fifty million pounds of fat make?

A. A slight excess of one-third.

JOHN D. PECK.

Sworn to before me September 17, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed in New York Co.

(Complainant here offers in evidence a letter from Mr. George Harding relating to the statement of Professor Barker as to releasing the witness Barker from a retainer paid him by the complainants or their predecessors, and requests the notary to identify it with this record, and mark the same "Complainants' Exhibit Harding Letter.")

(Objected to as wholly incompetent as evidence and unproved.)

(Letter marked in evidence "Complainants' Exhibit Harding Letter.")

September 17, 1884.

ASA F. SMITH,
Notary Public, Kings Co.

Certificate filed in New York Co.

Adjourned to September 18th, at 11 a. m.

George Harding, counselor-at-law.

NEW YORK, *Sept.* 15, 1884.

Charles D. Deshler, Esq., sec., etc., city.

DEAR SIR: In reply to yours of the 11th inst.

On reading the extract from Dr. Barker's examination it appears Dr. Mott opened correspondence with him, negotiated for and sent him his retainer. Dr. Mott knows in what way and for what purpose that retainer was sent.

306 As it appears from Dr. Barker's testimony that I did not send the retainer, I do not see how I can testify as to what

the retainer was understood to cover. If the retainer had passed through my hands directly to Dr. Barker I might have been expected to understand what its purpose was if I could carry it distinctly in mind.

In answer to your questions:

No. 1. I cannot remember distinctly at this stage what my understandings at that time were. I have a general impression that Prof. Barker was retained under the Hippolyte Mége patent.

2d. I have no recollection of ever informing Prof. Barker it was only for a particular suit.

3d. I do not recall writing any such a letter to Dr. Barker as enquired of, nor can I recall any such conversation as referred to in the extract or, in fact, any conversation whatever with Dr. Barker on the subject. If there is any such letter in existence written to Dr. Barker by me and it can be produced which I can see it may enable me to recall the alleged conversation.

4th. I cannot now recall any conversation or correspondence between Prof. Barker and myself on the subject. If there be such correspondence it would probably show what passed between us better than my unaided recollection. It is impossible for me to carry in my mind alleged conversations after so long a lapse of time, and I have no recollection whatever bearing upon any of the circumstances mentioned in your question. I have tried to recall any conversation or correspondence there may have been with Prof. Barker, but I am unable to do so. I do not think it at all probable that I should have made any such statements to Prof. Barker or written to him releasing him from his obligation under his retainer, and I cannot recollect having done so.

Very truly yours, GEORGE HARDING.

307 Professor HENRY A. MORTON, *who* being first duly sworn, testifies as follows:

Q. 1. Are you the same Professor Henry Morton who has heretofore been examined as a witness in this case and given a deposition at length therein in November and December last?

A. I am.

Q. 2. Have you examined and carefully read, so that you understand the same, the deposition given on behalf of the defendants by Professor George F. Barker, including both the direct and cross-examination of such witness?

A. I have.

Q. 3. Have you read the several exhibits introduced in evidence in behalf of the defendants under this deposition of Professor Barker and concerning which he has given his testimony, being principally French letters patent dated July 15, 1869, granted to Hippolyte Mége, marked "Defendants' Exhibit Mége French Patent," and also the translation thereof, marked "Defendants' Exhibit Translation Mége French Patent;" also "Defendants' Exhibit Translation Mége Bavarian Patent;" also "Defendants' Exhibit Translation Austrian Patent;" also "Defendants' Exhibit Mége English Patent," being a

duly certified copy of English letters patent granted to Hippolyte Mége, dated July 17, 1869, and numbered 2157?

A. I have.

Q. 4. Please state whether or not either one of these several exhibits, namely, the English, French, Austrian, and Bavarian patents of Hippolyte Mége, concerning which Professor Barker gave his testimony, anticipate, contain, or suggest the invention described, shown, and claimed in the letters patent sued upon in this case, concerning which you gave your former testimony, being reissued letters patent numbered 10137, dated June 13, 1882, and granted to the Commercial Manufacturing Company, Consolidated, as assignee by mesne assignments of Hippolyte Mége, deceased, and if you shall state that such foreign patents of Mége
308 do not contain or suggest the invention in the Mége patent, being the invention relied upon in this action, please point out fully and in detail wherein the process described in said several exhibits or foreign patents differ from the process of the Mége patent relied upon in this suit, and what differences, if any, in the resulting products therefrom and the practical importance of such differences, both as to processes and products appeared. If in connection with the subject-matter inquired of in this interrogatory you have made any practical and personal experiments in carrying out the processes of Mége in his foreign patents as represented by these exhibits and the process of his American patent relied upon in this suit, please state such experiments and the bearing they have had, if any, upon the opinions and conclusions you have formed in relation to this matter.

(Objected to because the complainants are estopped from asserting that the American patent is for a different invention from said foreign patents by the affidavit of Hippolyte Mége, the inventor, filed by him in the Patent Office with his American application, setting forth the identity of the invention applied for with the foreign patents, and which affidavit he was required to file under the rules of the Patent Office in connection with his said application, and which is in evidence in this case and a part of the record.)

(Same objection is made to all other questions and answers relating to this subject-matter, both in this and succeeding depositions.)

(And notice is given that at the hearing motion will be made to strike out all such testimony for the above reasons.)

A. I do not find that either of the several exhibits mentioned in your question—that is, the English, French, Bavarian, or Austrian Mége patents—contains or suggests the invention described and shown in the letters patent sued on in this case. In the first place, I find in the patent sued on in this case, which for brevity I will in future refer to as the American patent, the following new steps or modifications of steps in the process which are not to be found in the
309 other patents already named, and which for brevity I will in future refer to as the foreign patents. These new or modified steps are as follows:

First. I find in the American patent that directions are given for

the complete disintegration or comminution of the fatty substance to be treated so as to liberate or prepare for liberation the fatty substance in each individual fat cell. This is described in the following language: "A complete crushing is necessary in order to obtain rapid work without alteration. For this purpose, when the substance is coarsely crushed, he let it fall from the cylinders under millstones, which completely bruised all the cells." In none of the foreign patents do I find any suggestion even of such a treatment as this. Thus, in the English patent, at the corresponding stage of the process, I find the following language: "Complete washing: This is obtained by reducing or crushing the fresh suet under a shower of fresh water, which falls between two rollers at the same time as the fat, which, divided by the water and the pressure, falls into a vessel, in which the washing is completed by a stream of water." In the succeeding paragraph also the washed fat just described is referred to as "this fat deprived of all soluble animal matter." The above quotations, I think, clearly show that the operation to which they refer is simply a thorough washing, with only such a crushing and breaking of fatty masses as may be necessary to secure the removal of soluble animal matter. It is this partial crushing or breaking up which is alluded to in the American patent where it says "when the substance is coarsely crushed." My opinion as to the character of the treatment described in the above quotations from the English patent is confirmed by a number of experiments which I have made in the crushing of fat by passing it between rollers with a stream of water. These experiments show that it is impossible by such a treatment to do more than so crush and break the masses of fat as to secure a thorough washing, and that anything like such a complete crushing as would completely bruise all the cells, whether the rollers are substantially smooth, as might be assumed from the language of the English patent and the French patent and the Austrian patent, or are provided with conical cogs, as stated in the corresponding portion of the Bavarian patent.

310 As regards the language of the several foreign patents, this is substantially identical in the English, French, and Austrian patents, but differs slightly in the Bavarian patent, as I have already indicated, by the introduction of a reference to conical cogs on the rollers between which the fatty matter is crushed in the process of washing. This, however, I find to be an entirely immaterial difference, since the same effects are produced, whether the rollers are substansially smooth (that is, only rough enough to secure the feeding through of the fat placed between them) or are provided with conical teeth. In all cases no further effect can be obtained than such a breaking up of the fatty masses as will secure a thorough washing of the fat, but will not, to any extent, so completely crush it as to "completely bruise all the cells." It is therefore manifest from these documents that the invention set forth in the foreign patents only contemplated a thorough washing of the fat at this stage, while the invention of the American patent contemplates, in addition, such a perfect crushing or grinding as would "completely bruise all the cells."

The next difference which I observe between the American and foreign patents is in that part alluded to under the head of digestion. In the American patent specific directions are given as to the amount of an artificial gastric juice which is to be added to the fat and heated therewith to a temperature not exceeding 103° Fahrenheit for three hours. The amount of this gastric juice directed to be used is two litres, which would be about four and four-tenths pounds, to each hundred kilogrammes (which would be about four hundred and forty pounds) of fat; this is manifestly two per cent. of gastric juice by weight as compared with the fat. In the Engiish, French, and Austrian patents I find simply a general direction to prepare a gastric juice with a pig's stomach and acidulated water, no quantities being named, and to use a sufficiency of this to immerse the fat. Such a sufficiency I find by experiment would be somewhere from thirty to fifty per cent. of the weight of the fat. The Bavarian patent, in its corresponding clause, gives two sets of directions, the first substantially identical with that of the English, French,
311 and Austrian patents, but the second containing proportions, these being to one thousand kilogrammes of fat three hundred "kilos" of water, one "kilo" bicarbonate of soda, and two stomachs of a pig or sheep. In this case the amount of gastric juice would be substantially thirty per cent. of the fat.

A comparison of these documents makes it, I think, very plain that while in the foreign patents this process involving an artificial digestion was an essential and vital feature in the American patent it was regarded as of very subordinate importance and not depended upon for any material and essential result. In this connection also I observe that the American patent contains a step not found in any of the foreign patents—that, namely, which is referred to in the following language: "He slowly raised the temperature to about 103° F., so that the matter shall completely separate." Bearing in mind that the passage just quoted occurs in a paragraph whose earlier portion contains a full description of the gastric digestion at a temperature not exceeding 103° F., it seems to me that the quoted passage plainly refers to a subsequent step; in other words, the first part of the paragraph indicates a digestive treatment conducted at a temperature which (as is well known) is that of the greatest activity or efficiency for gastric juice.

After the fatty matter had been melted by this artificial digestion—that is, had been rendered through it by the softening effect due to this temperature and by the destruction and removal of the confining tissues by the action of the gastric juice—then, as directed in a later part of the paragraph, the temperature is to be raised slowly to some point about 103° F., and as little over this as possible, but so that the greasy matter should completely separate from the gastric juice and tissue, rendered more or less soluble by its action. We therefore have two distinct steps—one an artificial digestion, which, acting on the tissue of the thoroughly bruised cells, should so dissolve it as to liberate the contained fat, and thus render the entire mass practically fluid; secondly, another step, that of a gradual raising of temperature by which a

separation would be effected between the liberated fat and the tissue gastric juice and products of its reaction, causing the liberated fat to collect in a continuous mass above
312 while the other materials settle out below. Of this second step, as I have already said, I find no description or suggestion in the foreign patents. These all assume that under the influence of the large amount of gastric juice which they direct us to use a separation will be effected between the pure fat from the interior of the globules and the gastric juice, in which there was remaining the products of its reaction on the animal membrane. All these foreign patents manifestly assume that by the gastric digestion, as there carried on, a complete separation of this sort will be effected. The American patent, on the contrary, recognizing the fact that such a separation is very imperfectly effected, provides this new step of heating as an efficient means for securing this desired result.

Comparing, then, what may be called the first division of the Mége process, as expressed in the American and foreign patents, namely, the obtaining of a fatty substance separated from animal tissue and free from all offensive taste or smell, I should say that in the foreign patents artificial digestion as there set forth is exclusively relied upon to do the entire work. The fat is only sufficiently broken up to secure thorough washing; then thirty per cent. or more of gastric juice is added, and this is manifestly expected to completely transform and remove all the animal tissues so as to liberate the fatty matter and allow it to form a clear layer on the surface of the aqueous fluid containing the gastric juice, etc. In the American patent, on the other hand, the artificial digestion is relegated to a very inferior and manifestly unimportant office, for in the American patent the fat is not only so broken up as to admit of thorough washing, but is ground between millstones until every cell is bruised. Under these circumstances relatively little is left for the gastric juice to accomplish, and accordingly we are directed to apply of this fluid only two per cent. instead of thirty or over. Yet, further realizing the difficulty of separating the fat by the action of gastric juice alone, the American patent directs us to bring about this result by slowly raising the temperature to or about a low point, but until the required separation is secured by this application of gradually increasing heat.

The second great division of the Mége. invention, as I
313 understand it, consists in the process for removing the excess of stearine present in the fatty substance obtained as above. In the American patent this is directed to be done in the following manner: The pure molten fat is to be set aside in such a way that it will slowly cool to a temperature not less than eighty-six degrees Fahrenheit for soft fats or ninety-eight for hard fats. By this means a large part of the stearine becomes solid in the form of granules or crystals throughout the mass, while the more fluid constituents of the fat remain in a liquid form surrounding and intermingled with these stearine granules. This being the condition of the product, the same is caused to flow into what is known as a centrifugal, by means of which the fluid portion is drained away

and the stearine is left in a compact mass. The fluid drained away is then of a proper composition and physical constitution for use as a substitute for butter.

In the foreign patents, however, I find that a different process is directed to be pursued, though the result aimed at is much the same. In these patents we are directed to cool the fatty matter, not to any particular temperature, but until it becomes so solid that, being turned out on a table from the vessel in which it was chilled, it can be cut into blocks about half an inch thick and of any convenient size in their other dimensions. These are to be wrapped in cloth and placed between hot plates in a press. Under such conditions as these it is manifestly assumed that the heat of the hot plates will melt out the more fluid portions of the fat and leave the stearine unmelted. This is, however, only true to a limited degree. When a fatty substance has once become solid it will remain so at a temperature considerably above that at which it became so; in other words, it will take a much higher temperature to melt it again than would have been needed to keep it fluid. As the result of this it is manifest that while heat is penetrating to the interior of the blocks of solid fat a considerable amount of the stearine at the surface will be melted, and that thus the fluid portion forced out from the press would contain a much larger amount of stearine than would be found in it when the process of the American patent in this regard was followed. In other words, to keep the fluid fats melted
314 and remove them by pressure while so melted from the solid stearine would manifestly be a much more effective mode of separation than to allow them also to become solid and then endeavor to melt them out from between the stearine crystals by the use of hot plates. It is therefore, in my opinion, manifest that in this respect also the process of the American patent, both in its mode of operation and in the results obtained, is a different process from that of the foreign patents.

This general conclusion is also confirmed by experiments which I have recently made at the factory of the Commercial Manufacturing Company, at Brighton, near Boston. These experiments showed that when the fatty substance was allowed to become so solid by cooling that it could be cut into slices half an inch thick and was then placed in a press between hot plates it was impossible to obtain an oil at all comparable in composition and consequent fitness for use as a substitute for butter with that secured by the process of the American patent. Where the solid fat and hot plates were used a considerable amount of stearine was wholly or partially melted and forced out of the cloths with the fluid constituents of the fat which it was desired to secure; indeed the oil obtained in this manner was only slightly different from the rendered fat treated—that is, had only a small part of its excess of stearine removed. In addition to this general discussion of the subjects inquired about in your question, I will say that I have recently carried out processes of these various foreign patents, as far as it was possible to do so, in the following manner and with the results I shall state:

In the first place I prepared a gastric juice from the stomachs of

pigs according to the usual manner set forth in text books on physiological chemistry—that is, I made up a solution of hydrochloric acid of such strength that it contained about four-tenths of one per cent. of acid in water. In this acid was macerated for about two hours two pigs' stomachs to 200 pounds of such acidulated water. This produced a very active gastric juice, as I proved by mixing half a pound of it with a half a pound of fresh blood albumen, which it digested or dissolved with great rapidity, rendering the whole
315 mass liquid in about half an hour. Having placed 110 pounds of fresh fat (which had been thoroughly washed and broken up by being passed through grooved and toothed rollers with a stream of water) in a jacketed kettle, I added to the same seventy-four and one-half pounds of the gastric juice above mentioned and maintained the mixture with constant stirring at a temperature between 100° F. and 103° F. from 3.20 p. m. of September 2d until about 3 a. m. of September 3d. At this time the gastric juice had entirely broken down and dissolved the tissues so that the fatty matter had melted together into a thin salve-like mass, but still retained enough of the watery fluid to form an emulsion very much like the salve called "cold cream." The material had been in this condition for some time without change, and as it began to have a disagreeable (though not a putrid) taste and smell I concluded that it was useless to continue the experiment longer, and therefore had steam turned on in the jacket, so as to effect a thorough separation of the pure fat from the aqueous fluid mingled with it. After this had been effected I took the temperature of the fat and found it to be 128° F. Before this separation of the oil the taste of the nearly fluid or melted fat was decidedly disagreeable, though not putrid. To my own mind it suggested what I should call the gluey flavor which I always notice in Liebig's beef extract when no other strong flavor is added to mask it. When a greater heat had been applied and the oil was entirely separated the flavor became less offensive, and to my mind gave the impression of cooked meat or soup, but at no time during the entire operation (and I tasted the material from time to time) did I perceive anything suggesting the special distinctive flavor of melted butter.

Further examination adjourned to September 8th, at 11.30 a. m., in same room.

316 SEPTEMBER 8, 1884.

Parties met pursuant to adjournment.

Counsel present as before.

Direct examination of Professor H. MORTON continued:

(Answer continued:) To express the difference which I find between the foreign and the American Mége patents as heretofore defined, I should say that all the foreign patents have as their central idea, in reference to the first principal step, the removal of the animal tissue from a thoroughly washed fat by a process of artificial digestion solely, this being absolutely the only means suggested for obtaining

that end. In the American process, on the contrary, I find the central idea of the corresponding step to be the separation of the pure fatty matter from the animal tissues by a moderate heat aided by a very thorough mechanical breaking up or comminution and some slight artificial digestion effected by a minute percentage of artificial gastric juice; As regards the second principal step, namely, the removal of the excess of stearine, I find that this is directed to be accomplished in the foreign patents by allowing the entire mass to gradually cool and harden and then melting out the more fluid portion by the employment of hot plates in a press. In the American patent, on the other hand, directions are given to allow the entire mass to cool only to such a point as would cause the stearine to become solid, leaving the other constituents liquid, and then to separate this liquid from the intermingled solid by the use of a centrifugal aided by a press without any application of heat, either by hot plates or otherwise. Before closing this answer I desire to correct a mistake which I made inadvertently in an earlier part of the same, and which I noticed almost immediately after, but forgot to correct, as I intended to do, at the close of the next paragraph. This error was the statement in my testimony at page —, which I request the notary to mark with a star. (The notary has so marked *.) This is the statement that the fat was to be treated according to the American patent with gastric juice for three hours. These words
317 "for three hours" should be omitted, as the patent does not specify the time in this connection.

Q. 5. I see that you do not specifically treat or render as prominent in your answer the English patent to Mége as his other foreign patents, namely, French, Bavarian, and Austrian. Please state what differences there are, if any, either in process or product, between the Mége, English, French, Bavarian, and Austrian patent exhibits. I mean, of course, the process and product of those patents down to the point of the attempted separation of the stearine from the oil.

A. There is no substantial difference between the English and the foreign Mége patents, but there is this formal difference: That in the English patent we are directed at the end of the artificial digestion to draw off the fat freed by this process from the membrane into another kettle, in which it is to be allowed to settle, as my previous answer has shown. The fatty matter by the time this digestion was complete would have acquired a very disagreeable flavor, unfitting it for use as a substitute for butter, and therefore it would be useless to put it in another kettle, as the product was already spoiled. Moreover, in an experiment which I actually made I found that this was the result practically reached. In that case the digestion was continued for fifteen and one-half hours, and at no time during this period was the product in any way fit for use in the preparation of a substitute for butter. At the start, of course, the material was simply raw fat, full of animal membrane, and by the time this membrane had been removed by the artificial digestion the fat had acquired a very offensive taste and smell, which grew more pronounced as the process was continued.

Q. 6. I call your attention again to the paper now in evidence in

this case and which in your first examination in November last, in question 20, was referred to as "the summary" of the defendant's process, and which is offered in evidence immediately following the last direct interrogatory of defendant's counsel in his examination of Professor Barker, and identified there as follows: "The stipulation between the parties relating to the process worked by the defendant is as follows;" and I desire to know if you have practically
318 followed that process with a resulting product therein indicated; and, if so, when and where, and state for more certainty the detail of the defendant's process as indicated by this stipulation and your experiments thereunder.

(Objected to because testimony at length upon the question of infringements was taken by the complainants in their direct case, and because incompetent in rebuttal.)

(The same objection is made to all other questions relating to the subject-matter, and notice is hereby given that at the hearing a motion will be made to strike out all such testimony.)

Complainants' counsel calls the attention of the court to the fact that this interrogatory is in direct reply and rebuttal to the alleged personal experiment of the defendant's expert witness as to the same subject-matter.

A. I have practically carried out the process referred to in your question on the third of September, beginning on the third of September last (1884), at the works of the Commercial Manufacturing Company, at Brighton, near Boston, and the following are the details:

At 2.15 p. m. of September 3d I began hashing fresh fat (which had been previously washed with cold water) into a large jacketed kettle. The hashing was done with an ordinary hashing machine, driven by steam power. By 3.05 p. m. the kettle, which was capable of containing a little over a ton of fat, was nearly full, and the hashing was then stopped, the jacket of this kettle was heated by hot water, and a mechanical stirrer, operated by power, was moving around in it from the time the hashing began. By 4 p. m. the entire mass of fat, with the exception of a few lumps which had adhered to the stirrer, was substantially melted or fluid. Steam was then run into the jacket to raise its temperature, and the temperature of the melted fat then rose as follows:

Time.	Temperature.
4.05 p. m.	115° Fahrenheit.
4.08 "	116° "
4.16 "	118° "
4.25 "	120° "

319 At this time the melted oily substance appeared to be well separated, and the jacket of the kettle was therefore cooled off so as to prevent further increase of temperature, and the stirring device was removed from the kettle, which remained undisturbed until six p. m., at which time the fat in it stood at 120° Fahrenheit, and was then drawn off into two smaller kettles, one of which it filled fully and the other partially. It was there heated by means

of hot water in the jackets of said kettles, until at 6.30 p. m. the full kettle showed a temperature of 134° Fahrenheit and the partly full one of 135° Fahrenheit. The jackets were then partly cooled to prevent further rise of temperature, and the contents of both remained undisturbed until 7.55 p. m., when the fat from the partly filled kettle was run into a seeding can, marked "1," its temperature being 130° Fahrenheit. At 9 p. m. the full kettle was drawn off (the temperature of the fat being 132½° Fahrenheit) into two seeding cans, one of which, marked "A," it filled, and the other, marked "11," it partly filled. The can marked "A" was placed in the seeding-room (where the temperature was maintained between 84° Fahrenheit and 86° Fahrenheit, day and night) until late in the afternoon of September 5th. The other two cans, which were only partly filled, were run into a cool room, where they stood over night, but the weather being very warm the next day (over 85° F. in this "cool room") they were placed in a tank of well water at about 60° Fahrenheit (the temperature was not taken). On the morning of the 5th, this water having become warm, some ice was added to this tank. These partially filled cans had nothing to do with the process described in the "stipulation as to defendants' process," and I merely mention them here in describing what became of the entire material operated upon. The can "A" which was kept in the seeding-room at a temperature between 84° Fahrenheit and 86° Fahrenheit is the only one concerned in the carrying out of this process. At 10.15 p. m., September the 5th, the contents of this can "A" were thoroughly mixed together and 196½ pounds of the uniform mixture were taken out and wrapped in canvas cloths and placed in a hydraulic press between iron plates at the temperature of the seeding-room
320 in which the presses stood and where the plates had been all along. The amount in each cloth was in the vicinity of a pound and a half. The pressure applied was about three hundred and fifty-two. A large amount of fluid oil ran out from the bags, and the amount of stearine left in the bags was thirty-eight and five-tenths pounds, or about 19½ per cent. of the material put into the press.

Recess.

Q. 7. The stipulation as to defendants' process speaks of the fat at the time it entered defendants' kettles as being "thoroughly hashed and is comminuted." The defendants' expert witness Barker testified that this thorough hashing and comminution of defendants' fat is so complete and entire as to render it pulpy or pasty. Please state whether or not this was the condition of the fat used by you in the process last described when it entered the kettle—that is, pasty or pulpy.

(Same objection, and also because leading.)

A. The condition of the fat as it entered the kettle was substantially that of an ointment or salve; in other words, it was so thoroughly comminuted as to feel soft and devoid of structure when

pressed between the fingers. The terms pasty and pulpy would in this respect, I think, fairly describe it.

Q. 8. Please state whether or not you have followed particularly and carefully the process of the Mége American patent sued upon in this case down to the fifth section thereof or the separation of the stearine from the oil, and, if so, when and where, and give the procedure followed by you and the result therefrom.

A. I followed out the process of the patent referred to at the works of the Commercial Manufacturing Company in Brighton on September 4th and 5th, 1884. In the first place there was prepared a quantity of gastric juice according to the directions of this patent—that is, half a stomach of a pig which had been well washed was chopped up and added to three litres of water containing 30 grammes of biphosphate of lime. This was macerated for three hours at a temperature a little under 103° F.—that is, between 100° F. and
321 103° F. At the end of that time it was strained through a fine sieve, and two litres of the strained liquid were mixed with two hundred kilos of finely hashed fat, which had been thoroughly washed in cold water. This mixture was gradually raised during two hours to a temperature of 103° F. Thus the fat was put in the kettle at 1.50 p. m.; at 2.40 p. m. its temperature was 86° F.; at 2.50 its temperature was 90° F., and at 4 o'clock its temperature was 103° F. At this time the fat was thoroughly melted, but there was no separation of the oil. Steam was therefore let into the jacket, raising its temperature to about 160° F., when by 4.25 p. m. the oil was completely separated (the contents of the kettle being constantly stirred all the time); the jacket was then cooled to prevent further rise of temperature, and two and two-tenths pounds of salt was added and stirred in for fifteen minutes. Before adding the salt I tasted the oil or fatty substance and found its taste to be identical with that of melted butter in its freedom from any taste of tallow or of raw fat. As might naturally be supposed, however, it had no characteristic taste of butter. After allowing the contents of this kettle to settle until 5.15 p. m. the clear fat, whose temperature was at that time 128° F., was drawn off into a seeding can marked "B." This was placed in the seeding-room, whose temperature, as I have already said, was kept constant at between 84° and 86° F. At 3.20 p. m. on September 5th a portion of this fat was placed in canvas cloths and subjected to pressure in a hydraulic press between iron plates, in the manner I have already described, with the result of producing a clear yellow oil, having the same characteristic taste which I have already described as resembling that of melted butter in its entire freedom from anything resembling tallow, raw fat, or anything else objectionable in a food product intended to be used as a substitute for butter.

Q. 9. Did you taste the oil in carrying out the defendants' process and handle it and smell it both at the time it was drawn from the melting kettle and at the time it flowed from the press when separated from the stearine?

A. I did.

Q. 10. Will you please state whether or not there was any differ-

ence, either in composition, taste, or smell, between the prod-
322 uct produced by the defendants' process, as represented by the stipulation and your experiments, and the product produced under the patent sued upon by your experiments?

(Same objection and further because the complainants are estopped and precluded from contradicting in any manner the testimony of their own witnesses in their *prima facie* case upon this subject, and in particular the testimony of Horace Manley, who testified for the complainants as follows:

"C. Q. 8. Did this fat have any positive taste or smell of any kind, or was it sweet, tasteless, and odorless?

"A. It was tasteless and odorless.

"C. Q. 9. It did not have what is known as the peculiar butter taste and smell that is characteristic of good butter?

"A. No; it hadn't."

Also the testimony of Henry De Maziere and other witnesses on behalf of complainants.)

A. There was no difference. Both resembled melted butter in the entire absence of any taste of tallow or of raw fat, and might, therefore, in this sense be said to resemble in taste melted butter, but neither of them had anything of the characteristic taste which is peculiar to butter as distinguished from all other fatty substances. It was not, in my opinion, absolutely tasteless and odorless, but possessed, in common with butter and other very pure fats, a taste and odor suggesting neither raw fat nor tallew, and in no respect offensive.

(Same objection to the answer.)

Q. 11. In answer to question 8, describing your experiments under the Mége patent sued upon, you state that the fat having thoroughly melted at 103° F., but no separation of the oil appearing, steam was then turned into the jacket at 4 o'clock p. m., raising its temperature to about 160 F., when, by 4.25 p. m., the oil was completely separated. What was the temperature in the kettle, the highest temperature, between 4 and 4.25 p. m., when the water in the jacket was 160°?

A. 120° F. This was the highest temperature to which the oil was heated. The temperature 160° F. was simply that of the water in the jacket outside the kettle.

323 Q. 12. As I understand you, then, Professor Morton, these practical experiments you have personally carried out under the Mége American patent and the defendant's process demonstrate conclusively that there is not the slightest difference practically between the two processes and the products?

(Same objection, and also because grossly and outrageously leading.)

A. You understand me correctly. I consider the process described in the stipulation as the defendants' process, and the product obtained thereby to be practically and substantially identical with the

process described in the Mége patent, on which this suit is brought, and with the product therein described down to the end of the 5th section of that patent.

Q. 13. Do you agree with the defendant's expert in his statement that the Mége patent sued upon in any part of its first five sections is a physiological process?

A. I do not. A physiological process is a process carried on under the influence of living tissues, as in the body of an animal or plant, and therefore any such process as that of artificial digestion would not be a physiological, but a chemical process. I consider that the true relation of the process of this patent to a physiological process consists in this, that the process of the patent imitates by mechanical and chemical means the physiological process which goes on in some unknown way in the body of a cow who is developing milk from her own fat.

Q. 14. Will you please state whether or not the improved material claimed in the Mége American patent sued upon, as produced by the first five sections thereof, is identical with natural butter or is the same product precisely, without any essential difference, as the butter product from the milk of cows?

A. The improved material claimed in this patent is not identical with nor the same as natural butter made from milk. All we can say for it is that it is either an efficient substitute for butter in some uses, or by additional treatment may be made an efficient substitute in other uses. Thus, as regards its composition, it entirely lacks the butyrine, caseine, and other flavoring substances found in nat-
324 ural butter, and as regards its structure it is a homogeneous mass of fatty matter and not a solid emulsion of fatty matter or mass made up of minute fatty granules separated by films of an aqueous fluid, as is natural butter.

Q. 15. Is there anything in the concentrated digestion or gastric juice of the third section of the Mége patent sued upon which gives in any respect the taste or flavor of butter in the slightest degree to the product, or will the product have anything less of a butter taste or smell or composition if the gastric juice of this section is entirely omitted?

(Objected to as leading.)

A. The concentrated digestion in this patent or the gastric juice as there directed to be used has no influence whatever on the taste of the product, which is exactly the same whether this part of the process is omitted or employed, and neither in this nor in any other mode of its employment with which I am acquainted has gastric juice any capacity to produce a butter-like flavor.

Q. 16. State how long were you and your associate chemist continuously engaged in carrying out the experiments under the Mége foreign patents, made exhibits in this case, and the American patent sued upon and the defendants' process, and whether or not these experiments were carried on continuously, both day and night, in obtaining your results.

A. We were engaged on these experiments together from ten

o'clock a. m., Tuesday, September the second, until about six o'clock p. m. of Friday, September 5th (of last week). On Tuesday, the second, I remained at the factory from ten o'clock in the morning throughout the night, and on Wednesday, the 3d, until about 9.30 p. m. During this time I was attending to the processes going on, except from 1.20 till 3.50 a. m. of September 3d, when I was lying down or asleep for about two hours and a half while Professor Wheeler watched the processes. During the remaining nights nothing was done except to maintain the seeding-room at the temperature of 84° to 86° Fahrenheit, which was attended to by the regular watchman of the factory, so allowing us to return to Boston for the night. This maintenance of the temperature during the night was attended to by the watchman on the night of the 3d and the night of the 4th.

325 Q. 17. Will you please state what particular advantage there is, if any, in the crystallization of the Mége American patent at the temperature indicated in the fourth section thereof.

A. There is, I think, a very great advantage in limiting the temperature at which the crystallization is allowed to take place in the manner set forth in this patent. In other words, by allowing the melted mixture to cool down only to a temperature of 86° Fahrenheit with certain fats and 98° Fahrenheit with others the result is secure that the stearine only crystallizes in granules through the mass while the rest of the substance (that being the fluid oil which it is desired to extract) remains fluid and can be readily separated by well-known means from the solid stearine. If the cooling and consequent crystallization were allowed to go on at or to a lower temperature, then not only would the stearine crystallize, but so also would the palmatin or, as it was formerly called, margarine. If under these circumstances mere mechanical means were employed to extract the fluid oil we should get a substance consisting mainly of oleine (which in fact resembles oleine oil) and is much too fluid to serve as a substitute for butter. If to avoid this result we attempt to extract the palmatin as well by the use of hot plates in the press, then in our effort to melt out the palmatin we shall of necessity melt and press out fat of the stearine, and so get an oil containing too much stearine to be useful as a substitute for butter. In other words, by checking the process of crystallization at a point when all the material we wish to extract is still fluid we render this extraction certain and easy.

Q. 18. I see by the defendant's expert deposition, namely, Professor Barker, that Professor Barker offers as a part of his deposition in an answer a tabular comparison of the Mége foreign patents with the American patent sued upon. Will you also prepare such tabular comparison and supplement thereto, also the defendant's process, before the final closing of your deposition?

Cross-examination by T. S. E. DIXON:

C. Q. 1. Without attempting to express an appreciation of
326 the remarkable ingenuity with which you have arrived at the opinion expressed by you that Mége's foreign patents nor

either of them do not even "suggest" the invention set forth in Mége's American patent, I will call your attention to the first of the three points of alleged difference mentioned by you, to wit, the preliminary crushing of the fat, and will ask you if you personally have ever crushed or attempted to crush fat under millstones?

A. I have not.

C. Q. 2. Have you ever seen it done or attempted to be done?

A. I have not.

C. Q. 3. Are you aware that when the attempt is made to crush fat between millstones that the fat quickly gives the face of these stones a coating of grease, so that they slide upon one another, thus impairing their efficiency for that purpose?

A. I am not aware of any such action.

C. Q. 4. You are not aware of it because you never have tried it, but what is your opinion as a practical expert as to the probable action of the fat and millstones in such case in practical industrial operations upon a commercial scale?

A. I do not claim to be a practical expert with reference to milling, but my general knowledge would lead me to suppose that notwithstanding the greasing of the stones the fat would be carried forward between them by centrifugal force and would have its tissue torn up and its cells completely bruised, as the patent states.

C. Q. 5. Can you form any conjecture why other expedients have been so generally and universally adopted throughout the country for crushing fat instead of this, which you deem such an admirable arrangement for doing the work, but which to your knowledge has never been adopted nor even tried in this country?

A. I can suggest several reasons. In the first place, the machine known as a hasher is, I believe, much cheaper and more easily put in operation than a pair of millstones. In the second place, it takes much less power to drive in proportion to the work accomplished; and, thirdly, would occupy much less space. Any one of these reasons would, I think, be sufficient to induce any one in
327 fitting out an establishment to employ hashers instead of millstones to effect that minute comminution of the fat which is stated as the object in view in this patent.

C. Q. 6. And finally, and really, did you not state in your former deposition that the modern hashing machine made a more perfect comminution of the fat?

A. I think it is quite probable that it may do so, but as I have never experimented with a millstone I am unable to make any positive assertion as to this point.

Counsel for defendant refers to answer to C. Q. 36 in Professor Morton's former deposition.

Adjourned to September 9, 1884, at 10 a. m., same place.

Cross-examination of Professor HENRY MORTON by T. S. E. DIXON, Esq., resumed:

C. Q. 7. Professor, did you not, in your former deposition in this case, in passing upon the question of infringement by the defend-

ants in their process of the complainants' patent, set forth that the more complete subdivision of the fat by the modern hashing was, in your theory, an equivalent for the use of the gastric juice set forth in the patent but omitted by the defendants?

A. To the best of my present recollection, the ground that I took in this connection in my previous testimony was that the omission of the treatment of the gastric juice in the process of the defendants was compensated by two things, one being the finer hashing or comminution, and the other a probable slight increase in temperature. I say probable because the patent does not limit the temperature, but yet, I think, contemplated a temperature somewhat less than 120° to 130° Fahrenheit, which I understand to be that employed by the defendants.

C. Q. 8. The means set forth in the patent for effecting the comminution of the fat are millstones. It now appears that when you made the comparison between the means used by the defendants and the means set forth in the patent for effecting this comminution you had no knowledge as to the operation of the means set forth
328 in the patent for this purpose or as to how well or ill they operated, and that you now have no knowledge of the subject, but "suppose that, notwithstanding the greasing of the stones, the fat would be carried forward between them by centrifugal force and would have its tissue torn up and its cells completely bruised, as the patent states." Are you in the habit, as an expert, of making such careless statements upon vital points in the case when the exigencies seem to require it?

(Complainants' counsel suggests to defendants' counsel that he would perhaps be better able to interrogate the witness without exhibiting his unpleasantness and sensitiveness in his questions if he would post himself slightly on the different styles of addressing the grinding surfaces of millstones.)

A. In the first place, I am by no means prepared to admit that in the present case I have either made any careless statements or any statements, careless or otherwise, dictated by the exigencies of the case. The suggestion of the counsel for defendant is one of those against which might well be quoted the famous motto of the Order of the Garter. As to these statements to which reference has been made, and which counsel for defendants does not appear to understand, I will, for his benefit, explain as follows: I have neither formerly claimed, nor do I claim at present, any knowledge as to the action of millstones in grinding fats, beyond the statement in the patent, which I assume to be true in the absence of any testimony to the contrary, namely, that under millstones all the cells of the fat can be completely bruised. Assuming this to be true, it also seems to me highly probable that the modern hashing machine should effect a yet more perfect comminution of the fat, since from its mode of action it would almost certainly not only bruise but in most cases also break the fat cells, and thus render relatively useless the slight treatment with gastric juice, namely, the addition of about two per cent. of said gastric juice, indicated in the patent.

With this explanation, I fail to see anything in the slightest degree hasty, inconsiderate, or otherwise than entirely consistent in all that I have said on this subject.

329 C. Q. 9. You have now passed from the certainty of your statement in the former deposition to what seems to you "highly probable;" but even assuming it to be true, namely, that under millstones "all the cells of the fat can be completely bruised," take this in connection with your statement in your former deposition in answer to C. Q. 131, that in the use of the modern hasher "there would undoubtedly be a good many fat globules whose cells would escape rupture, and likewise portions of connective tissue," does it not appear rather of a hazardous probability upon which to base such a decisive and positive opinion that the defendants are infringing upon complainants' patent because of the equivalency mentioned?

A. In the first place, it is purely an assumption of defendant's counsel that my opinion as to the fact of infringement, or, in other words, the equivalency of defendant's process to the process of the patent in suit, rests solely on the point in question. As I have already stated in a recent answer, I have considered the use of gastric juice as substituted in defendant's process not only by the finer comminution, but also by the higher temperature employed. Aside from this, however, I do not think that the statement just quoted, namely, that some fat globules might escape rupture and some portions of connective tissue likewise, is at all inconsistent with the opinion that most of the fat globules would be ruptured, and that the comminution on the whole would be more perfect with the modern hasher than with the millstones, even though the latter did completely bruise all the cells, which complete bruising might be consistent with a failure to rupture any of them and a failure to thoroughly break up the many portions of connective tissue.

C. Q. 10. Am I to understand from the first part of your above answer that you now abandon the position that the "probably" more thorough crushing of the hasher over the use of the millstones is an equivalent for the use of gastric juice, or do you still maintain the position, although based upon what now appears to be an assumption on your part?

A. I abandon no position, but decline to assume the position suggested by you in your previous question, namely, that the
330 more perfect comminution is the only substitute in defendant's process for the employment of gastric juice, as directed in the patent. I still maintain the position which I have held all along that this more perfect comminution is one of the two equivalents in defendant's process which takes the place of the employment of gastric juice, as directed in the patent, and this I do with neither more nor less positiveness than before. All my statements on this subject having been expressed as opinions founded on the best of my knowledge and belief.

Recess.

C. Q. 11. Rolls and millstones reduce the fat by crushing it; a

hasher, however, operates by slicing the fat with its revolving knives. Is it not also rather a remarkable position for an expert to take that, comparing the operation of the hasher on the one hand and of the rolls on the other hand with the operation of the millstones, the assertion is made, substantially, that there is no difference in the eye of the law between the use of the hasher and the millstones, but that there is a vast difference between the use of the rolls and the millstones, although the operation of the millstones with which the comparison is made or its attendant difficulties is admitted by the witness never to have been witnessed or examined by him, or the comparative degree of excellence of work tested by him in any manner whatever?

A. If your question is intended to represent a purely hypothetical case, not founded on any of the facts proved in the present controversy, I can only say that your statement of it is, to my mind, so indefinite that I am quite unable to come to any conclusion as to whether there would or would not be anything remarkable about the matter inquired of; if, on the other hand, this question is intended to represent the facts and statements heretofore developed in the present case it is so full of inaccuracies or omissions that, without correcting these, any attempt to answer would be misleading. Thus, in the first place you say rolls and millstones reduce the fat by crushing it. This I consider to be manifestly incorrect.

331 Rolls or rollers reduce fat so far as they may effect its reduction by crushing, but millstones, on the contrary, operate by an entirely different action, which is known as grinding. Without claiming to be an expert in milling and without claiming to have made any experiments in the grinding of fat with millstones, I at least know this, that when millstones are used in the ordinary manner one of them is at rest while the other, placed close to and face to face with it, rapidly rotates; that the adjacent surfaces are corrugated in various ways, and that any substance introduced through the center of the upper stone is caught by the revolving one and rapidly whirled around with it so as to produce a violent rubbing or grinding action, by which the substance so acted upon is broken up and bruised, or, if of a brittle character, reduced to an impalpable powder, to a greater or less extent. This action is manifestly and of necessity entirely unlike the crushing action developed by passing a substance between rollers. This correction being made, it should then be understood that it is asserted in one or another of the various patents now under consideration that the crushing of fat between rollers only so breaks it up as to secure a thorough washing, and that when a complete crushing is required the substance, after being coarsely crushed by rollers or cylinders, is then allowed to fall under millstones, which completely bruise all the cells. Then, again, it is to be remembered that the hasher, as you have correctly stated, operates by slicing the fact with revolving knives, and that these knives move with great rapidity in a closed cylinder, in close proximity to fixed blades, between which and the revolving knives a shearing action takes place. Finally, to this we must add that in those patents where the grinding between rollers

is referred to no suggestion whatever is made as to any more complete breaking up of the fat than would be necessary to assist in a thorough washing, and that, on the other hand, in the later patent, which refers to the use of millstones, it is distinctly stated that after the coarse crushing the fat is to be treated under millstones, which completely bruise all the cells.

Finally, it should be borne in mind that the hashing machines were well known at the date of the last-mentioned patent. Under these conditions I think it is a perfectly logical and, indeed,
332 the only intelligent position for an expert to take, that the crushing between rolls referred to in certain patents is an entirely different operation from either the grinding between millstones until all the cells are bruised or the pulverizing in a hashing machine, and also that the grinding under millstones and pulverizing with a hasher are substantially identical or equivalent treatments, in so far as the minute comminution of the fat is concerned, and differ only in degree, even though said expert admits that, while he is familiar from personal experience with the action of the hasher and the crushing between rolls, he has no experience in the grinding of fats under millstones.

C. Q. 12. Is this all the explanation you have to make regarding your assumption of this position?

A. I do not regard my last answer as an explanation of anything, but simply as a correction and completion of an imperfect statement of the facts which already appear in the present record, and I do not consider that any explanation is needed of the position taken for the opinion expressed by me in view of the facts as they appear in this record already.

C. Q. 13. Although you professedly know nothing about the operation of millstones upon fat, are you prepared to say that the fat would not fill the grooves between the corrugations you have mentioned upon the face of the stones and so as to cover with grease the surface of the stones in contact?

A. I am prepared to say that, in face of the positive assertion of this patent and in the entire absence of any proof to the contrary, I do not believe that any such action as you mention would take place to such an extent as to prevent the accomplishment of the result mentioned in the patent, namely, the complete bruising of all the cells. The stones would undoubtedly be covered with grease and the grooves more or less filled up with fat, but this condition is perfectly consistent with their accomplishing all that is here claimed. In an ordinary millstone the surface of the stones during their operation are covered with flour and the grooves in them, to a great extent, filled with the same, and for all this they grind the grain most efficiently.

333 C. Q. 14. And in like manner, I suppose, you would say that when a soft substance like fat falls between such greasy millstones it is in no sense whatever "crushed?"

A. Not by any means. The term crushing might be used in a multitude of senses, one of which would manifestly be synoymous with a complete bruising of every cell spoken of in the fat. What

I do mean is that the grinding action of the millstone would be a practically and substantially different thing from the crushing between rollers, such as is described in certain patents which have been referred to in this case.

C. Q. 15. The use of rolls, millstones, and hashers were all known at the time of the patent as implements to be used in the reduction or subdivision of fats, were they not?

A. Not millstones, as far as I am aware. Rollers have been mentioned in the foreign Mége patents, and hashers were, I believe, in more or less general use for fat and fatty substances.

C. Q. 16. You state that in the foreign patents it is asserted that the "crushing of fat between rollers only so breaks it up as to secure a thorough washing." Take, for example, the Bavarian patent. I refer you to the passage in that patent upon this topic which reads as follows: "1st. Washing and crushing.—The crude fat is exposed to a jet of cold water between the conical cogs on two iron cylinders. It is finely subdivided by the current of water and the pressure and falls thence into a tank, where a current of cold water completes the washing." Professor, is there not here, as expressed both in the title and in the body of the paragraph, provision made not only for the washing but also for the crushing or finely subdividing of the fat by the current of water and the pressure as the fat passes through the conical-toothed cylinders?

A. Not as I understand it, for the following reasons: In the first place, though I do not myself understand German, I have been informed by those who do that the word "finely," in the assumed quotation contained in your question, is an addition unwarranted by anything in the German text of this patent, which contains no word or expression which suggests that the subdivision spoken
334 of is a fine one; even if this word, or its equivalent, did exist in the original, I should say that the fineness of subdivision was only that required for thorough washing. I think that taking the entire paragraph together it is perfectly manifest that the operation here contemplated is simply one of washing to which the crushing is an adjunct or aid. In addition to this there are two other practical reasons: If the fat was so thoroughly crushed as to have its ultimate cells bruised and separated in contact with water such an emulsion would be formed that I do not believe that it would be possible to accomplish the washing at all. The water containing animal matter in solution would form an emulsion from which the fat would not separate within any reasonable time. In the second place, in numerous experiments which I have tried in crushing the fat between rollers, it has been impossible to accomplish any thorough breaking up or comminuting of the fat, but only such a crushing and subdivision as would render a thorough washing easy.

Adjourned to September 11th, at 10 a. m.

SEPTEMBER 11TH—10 a. m.

Adjourned to September 12th, at 11 a. m.

SEPTEMBER 12TH.

Met pursuant to adjournment.

Counsel present, as before.

C. Q. 17. Then, in your beautiful theory of the utter inadequacy of the Mége foreign patents, it makes no difference in the passage just quoted whether the word "finely" is properly there or not, so far as the final result is concerned?

A. I am not aware that I have propounded any theory such as you have mentioned, but as a matter of intelligent interpretation of the language of these patents I think that the only effect of introducing the word "finely" is to somewhat impair the clearness of the statement as it exists in the originals.

C. Q. 18. And that it makes no difference so far as the final result is concerned?

335 A. It makes no difference in this sense, that even if the word were present any intelligent interpretation of the entire passage would still leave the meaning the same as if the word were not there. In other words, it would leave the description as I have explained it to be, that of a method whose sole object and result was a thorough washing of the fat.

C. Q. 19. So far as washing the fat is concerned, it has been readily enough done, as already detailed in this case with reference to the practical industrial operation in this country, by simply applying water to the fat and washing it before it is run into the hasher, is it not?

A. Under the modified conditions set forth in the American patent and followed in the commercial application of the same, the very thorough washing set forth in the foreign patents is unnecessary, and, as you correctly state, has not been resorted to.

C. Q. 20. And as far as the crushing is concerned, have you not admitted in your former deposition that a fine comminution of the fat had been practiced in the arts, and has it not appeared in connection with that deposition that the importance of a fine comminution as a condition attendant upon artificial digestion was well known and understood at the time Mége took out his patent in 1869?

(Complainants' counsel instructs the witness that he has the right to insist that defendant's counsel shall point out to him such clause or portion of his previous deposition as defendant's counsel refers to in his question, if he desires.)

A. As I have not seen the deposition in question since it was originally made, about a year ago, I can only answer questions in reference to it in a general way, unless the specific passage is presented to me. I should therefore reply to this question as presented that thorough comminution of fats prior to their rendering at temperatures about that of boiling water was well known in the arts prior to the invention of Mége. Prior to this invention, however, nothing was known in the arts as to the use of gastric juice in connection with the rendering of fats. The artificial digestion of animal mat

ter by gastric juice was, however, known to chemists and physi-
336 ologists, and it would be, of course, manifest to every one that such gastric digestion might take place more rapidly when the material acted upon was finely comminuted, but I am not aware that any such fine comminution had ever been suggested in connection with the treatment of fats for the extraction of their greasy substance, either in scientific works or in connection with the art of rendering fats. What I have just stated is, I believe, in substance what I have previously stated in my earlier depositions in this case.

(Counsel for defendant states that he referred to the following from the former deposition of the witness:

"C. Q. 90. Passing now to the second step set forth by Mége in this patent, entitled crushing, please state whether or not this minute subdivision of the fat was ever practiced in the art, especially where pure fats were sought for perfumery or other uses, prior to the time of Mége's invention.

"A. It was."

Also the following passage from Dr. E. R. Carpenter's Physiology, published in 1853, cited in C. Q. 20: "The importance of the previous state of minute division and incorporation with aqueous fluid in promoting the operation of the gastric solvent has been already dealt on." And the following from the answer to C. Q. 21, inquiring into the conditions under which artificial digestion should be conducted: "These conditions would secure artificial digestion, and the same would be the more rapid as the comminution of the digestible material was more complete.")

C. Q. 21. I suppose, Professor, that, although Mége states that his invention "is the result of physiological investigations," and although the importance of a minute comminution of the material to be artificially digested was well understood, and although, as you have stated in answer to direct question 2, in the foreign patents this process, involving an artificial digestion, was an essential and vital feature," and although the mere washing of the fat is done daily in industrial operations by the simple application of water in wash-
ing, yet, nevertheless, in the foreign patents—for example, in
337 the Bavarian patent—in the paragraph already cited, entitled "Washing and Crushing," you assert that Mége only intended a complete washing, and the crushing and subdividing the fat which he directs in that paragraph is by the inference which you attempt to force into its language to be ignored or to be limited arbitrarily to only just so much crushing and subdividing as would enable the fat to be washed?

A. As your question covers a pretty wide ground, I think my best way of answering it is to state in a philosophical sequence what I understand myself to have stated from time to time in the present case in reference to the subject enquired about. In the first place, when Mége says that his invention is the result of physiological investigations I understand him to refer to his experiments on cows deprived of food, under which circumstance he found that they continued to yield milk retaining butter fat, and at the same time lost

the fat located in various parts of their bodies. This observation led him to believe that there was some method by which the cow, carrying on a physiological process, was able to convert her fat into butter fat, and he further proposed to imitate this physiological process by a mechanical and chemical one which should secure, to a greater or less extent, the same result by a process more or less analogous to that carried on by the cow. In this process, founded, as above indicated, on a physiological investigation, the first great step was to get the pure fatty matter free from the animal tissues enclosing it, without imparting to it any offensive taste or smell. This was accomplished in the cow by a physiological process of some sort, but one which neither Mége nor any one else, as far as I am aware, has ever explained. Certainly the process carried on by the cow can be in nowise similar to that which Mége proposes to use. In other words, the cow assuredly did not free her fat from its animal tissues by comminuting and digestion with gastric juice; she did not chew up her own fat and then digest it in her own stomach. There is, therefore, manifestly no claim of any close analogy between the physiological process and the chemical and mechanical one which Mége proposes to substitute for it at this stage. What he proposes to do
338 is to liberate the fat from the tissue by rendering the latter soluble by an artificial digestion which should convert its various insoluble constituents into soluble products. To accomplish this result he realized that, in the first place, a very thorough washing must be effected in order to remove every trace of blood and other material subject to rapid putrefaction, which would be likely to develop offensive odors during the process of gastric digestion. The gastric digestion being depended upon entirely in these foreign patents, a large amount of gastric juice is directed to be used and the temperature is strictly limited to animal heat, so as to secure the greatest efficiency for this digestive action. Under these circumstances, while it was well known, no doubt, by Mége, as well as by others conversant with the facts of physiology and chemistry (as I have already stated), that gastric digestion would be facilitated by a minute comminution of the animal matter to be acted on, it was, no doubt, also known to him that a minute comminution of fat was unnecessary in order to secure the complete conversion of the membrane contained in it into soluble products by the action of gastric juice in such quantities and of such a composition as he directed to be employed.

Mége also no doubt knew that any attempt to obtain a very fine comminution by crushing between rollers would be a failure, and, moreover, that it would be impossible to combine a successful washing with a very fine comminution for the reasons which I have alluded to in a previous answer, namely, the tendency of fatty substances to form permanent emulsions with water containing gelatinous animal matter in solution. Knowing all this, it is perfectly plain to me that he intended to describe exactly what his words, without any forced interpretation or the introduction of additional words, clearly express, namely, that the fat was to be thoroughly washed by the aid of such a crushing between rollers as

would be practical and useful for securing a thorough washing, and that it is only an ignoring of the plain meaning of the descriptions found in these foreign patents, or a strained interpretation, aided by the introduction of words not present in the originals, that any
339 one can reach the conclusion that such a complete comminution as is indicated in the American patent is contemplated or limited in any or all of these foreign patents.

Recess.

C. Q. 22. And, although Mége was thus well aware that the gastric or artificial digestion was greatly facilitated by crushing and subdividing the fat, yet when he directed this to be done in the passage cited he had no intention of thus facilitating the artificial digestion?

A. I think that if any one will read the entire passage in the Bavarian patent which is headed "washing and crushing," and also the first lines of the succeeding passage, headed "artificial digestion," he will see clearly that the washing and crushing referred to is simply such a washing and crushing as is required to thoroughly cleanse the fat and prepare it for the subsequent process of artificial digestion by removing from it such materials as would be the cause of injurious results during that process of digestion, and that no indication is there given of an intention on the part of the patentee to carry the crushing indicated any farther than would be necessary to secure such thorough cleansing. This conclusion is in nowise modified by supposing that Mége was aware of the fact that digestion was facilitated by the comminution of the animal matter acted upon, — I have already explained, as he no doubt knew that as far as this digestion was concerned it could be thoroughly effected under the conditions he prescribes without the aid of any more thorough breaking up of the fat than that which was required for its complete cleansing, and he no doubt also knew that an attempt to carry the breaking up or comminution further would simply introduce difficulties and complications which it was desirable to avoid.

C. Q. 23. Then, although Mége was well aware that his artificial digestion would be greatly facilitated by a crushing and subdividing of the fat, yet as part of your theory of the case you assert that Mége didn't have this fact in mind or in view when he directed this crushing and subdividing of the fat preliminary to his artificial digestion?

A. As your question stands it contains a series of state-
340 ments, none of which are, in my opinion, correct. In the first place, I have not stated nor am I now prepared to admit that "Mége was well aware that his artificial digestion would be greatly facilitated by a crushing and subdividing of the fat." This statement, as I understand it, means that Mége was aware that his process would be improved if he carried the crushing and subdivision of the fat to a point much beyond that necessary for thorough cleansing, as set forth in the patent itself. Now, this I do not think is true, nor have I anywhere admitted that such was the case; on the con-

trary, I have pointed out that Mége probably knew that for the execution of the process as he then proposed to conduct it any greater crushing and subdivision than was necessary for washing would be at least useless and probably injurious. What I have previously stated and would now reiterate in this connection is that Mége no doubt knew that artificial digestion was, as a general thing, facilitated—that is, made more rapid—by a very fine comminution of the animal matter acted on, but this is, of course, a totally different thing from the assertion that he knew such a fine comminution to be beneficial if combined with the other conditions of the process here set forth. In the second place, you ask me if, as a part of my theory, I assert that Mége did not have this fact in view when he directed this crushing and subdivision of the fat preliminary to his artificial digestion. In this query the assumption is made that the crushing and subdivision mentioned in the Mége patent would be a crushing and subdivision finer than that necessary for complete washing, and therefore a subdivision beyond anything mentioned in this patent. Such an assumption is, in my opinion, quite incorrect. In reply, then, to your question, having pointed out these errors as I consider them, I would say that Mége was not aware (nor do I believe it to be a fact) that his process of artificial digestion indicated in this patent would be facilitated by any crushing or subdivision more complete than that necessary for cleansing the fat, and that I assert that Mége in all probability did have in mind this fact, namely, that such minute subdivision would not facilitate his process when he directed that the crushing and subdivision should be such as to secure a thorough washing and nothing more.

341 C. Q. 24. Without attempting to follow you through a mass of theoretical distinctions I will ask you if "crushing and subdividing" are not good English words, having a well understood meaning, regardless of any assumption as to the relative degree of the fineness of the work performed.

A. They have undoubtedly well-recognized meanings, such meanings having, however, no limitation or indication whatever as to the extent of the crushing or subdivision which may be referred to, so that this limitation or indication must in all cases be supplied by their context, direct or remote.

C. Q. 25. Passing to the second point of difference you have asserted between the American and foreign patents, you stated, in answer to C. Q. 20, that "prior to this invention, however, nothing was known in the arts as to the use of gastric juice in connection with the rendering of fats." Then this use of gastric juice in the artificial digestion of fat was a very novel feature in the Mége foreign and American patent, was it not?

A. It was a novel feature when first announced by Mége, but after that it became part of the art, and in that sense was not novel at the date of the later patents.

C. Q. 26. This novel feature which appears in all of Mége's patents was original with him, was it not?

A. It was.

C. Q. 27. Mége states that his invention "is the result of physio-

logical investigations." Are you prepared to assert that in thus devising such a novel process in the arts Mége made no physiological investigations or consultation of authorities regarding digestion, both natural and artificial, that he might ascertain if possible the potent force which effected the work and the necessary conditions of temperature, etc., necessary to be observed to secure success?

A. On the contrary, I take it for granted that he consulted authorities and made experiments on this subject, and that in fact he continued such experiments up to the time when he took out his American patent, and possibly later.

(The last part of the above answer objected to as a mere assumption and irresponsive to the question.)

342 C. Q. 28. Although it is a question merely of nomenclature, the fact and the thing itself being undisputed, am I to understand by your answer to direct question 13 that an artificial digestion effected by gastric juice taken from the body of an animal and conducted at the same temperature is not a physiological operation nor one within the domain of the physiologist?

A. Bearing in mind that questions of nomenclature may in certain cases become quite as important as questions of fact, I would reply that my statement in answer to question 13 does not perhaps go quite as far as your present question suggests, as I am there speaking of an artificial gastric juice, only a very small part of which is obtained from the body of a living animal, but aside from this previous answer I will now state that as I understand it the words physiological process are only correctly used to a process which goes on under the influence of organized living tissues, and are incorrectly applied not only to such an artificial digestion as that set forth in the Mége patent, but even to a digestion performed by means of gastric juice wholly obtained from the body of a living animal. Such a process, while not a physiological process, is of course closely related to physiological processes, and of course comes under the domain of physiology. More strictly speaking, it would come into the domain of physiological chemistry—that is, that department of chemistry which is related to physiological actions.

C. Q. 29. And the action of the gastric juice from the stomach of an animal in the artificial digestion is a physiological action and within the domain of the physiologist, is it not?

A. It is not a physiological action, as I have already explained, but is within the domain of the physiologist just as the purely mechanical actions by which the heart pumps the blood through the circulating system is within the domain of the physiologist, though it is in no respect a physiological process.

C. Q. 30. I will refer you to the account of Dr. Beaumont's experiments in digestion with the soldier St. Martin, given in C. Q. 20 of your former deposition, covering the digestion of blood within and without the stomach with gastric juice taken from the
343 stomach. After detailing a number of such experiments the following is stated:

"A similar piece of beef was at the time of the commencement

of the experiment suspended in the stomach by means of a thread. At the expiration of the first hour it was changed in about the same degree as the meat digested artificially, but at the end of the second hour it was completely digested and gone. In other experiments Dr. Beaumont withdrew through the opening into the stomach some of the food which had been taken twenty minutes previously, and which was completely mixed with the gastric juice. He continued the digestion which had already commenced by means of artificial heat in a water bath. In a few hours the food thus treated was completely chymified. The artificial seemed to be but little slower than the natural digestion." Now, Professor, do I understand you to assert that in your nomenclature in the above-quoted experiments, in which the digestion was in both cases effected by the action of the vital animal fluid, that in the one case the digestion was effected by physiological action, but not at all in the other case?

A. In the first place, allow me to call attention to the fact that you have only quoted one-half of the first comparative experiment as given by your author, the previous half showing that when a similar piece of meat to that which in the stomach disappeared in two hours was treated with gastric juice in a water bath it was only completely digested after the lapse of ten hours. Aside from this, however, and supposing the experiment to have been absolutely identical in all the observed results, whether they were performed inside or outside of the living body, it would still be true that only that one which was conducted in contact with the living tissue of the man was, properly speaking, a physiological action. As to the vitality which your question claims for the gastric juice, I am not aware that any such property has been shown to exist in it. On the other hand, I find in one of the most recent text books on physiology, namely, that of Dr. M. Foster, of London, McMillan & Co., 1878, page 194, the following language in reference to pepsin, which is the actual principle found in gastric juice and essential to its digestive action. I should also observe that the effect of gastric juice on animal matter is to convert it into peptone:

344 "Peptone closely resembling it, if not identical with that obtained by gastric digestion, may be obtained by the action of strong acids, by the prolonged action of dilute acids, especially at high temperature, or simply by digestion with superheated water in a pepsin digestion."

The roll of pepsin, therefore, is only to facilitate a change, which may be effected without it.

C. Q. 31. For brevity I only quoted sufficient from the articles cited in your former deposition to indicate the character of the action in the two cases and to illustrate the distinctions in your nomenclature where you take issue with Professor Barker. Reference may be made to the entire article, which appears at length already in the record of the case. You have stated that this artificial digestion was "an essential and vital feature" in Mége's foreign parents. Then do you accept the logical conclusion that if a manufacturer in one of these foreign countries conducted the process as set forth in these foreign patents, with the single exception that he

omitted altogether the artificial digestion, and instead rendered the fat at a temperature ranging from 120° to 130° Fahrenheit, that such manufacturer would not be working the Mége invention thus patented?

A. Your question calls for a strictly legal opinion, and I therefore answer it with hesitancy. As I understand this subject, the infringement or non-infringement, or, in other words, the use or non-use of the invention in the hypothetical case stated in your question, would depend largely upon the wording of the claims. If these claims were so stated that all of them included this artificial digestion, then it is my impression that such claims would not be infringed, or that the invention as so claimed would not be practiced. If, however, the claims were otherwise expressed, then, under the conditions of the hypothetical case as I understand it, all the parts of the patent might be infringed by the practicing of the invention in all other respects except this.

C. Q. 32. The question is a simple one. You were asked on the direct examination in your former deposition to give an opinion on the question whether the process worked by the defendants was the same as the process set forth in the patent. Now, I ask you
345 to express your opinion whether you would regard the manufacturer in the case I have put as working the invention set forth in Mége's foreign patents, and, for example, in England under the claim in the English patent for "treating suet substantially by the means and in the manner hereinbefore described."

A. In reply to this specific question I should say that, as far as this part of the process is concerned, the rendering of fats by following the directions of the English patent, with the substitution of a heating to 120° F. to 130° F. for the treatment with gastric juice indicated in that patent, would not be the employment of the invention as there set forth and claimed in the claims as stated by you.

(Witness here presents the table of comparison between Mége foreign and American patents and defendant's process called for in direct question.)

(Counsel for complainants requests the notary to mark the same for identification.)

(Same marked.)

346 COMPLAINANTS' EXHIBIT MORTON COMPARISON TABLE.

A. F. S. Sept. 12, 1884.

Comparison of Mége Patents, Foreign and American, with each other and with the Process of Defendants.

French.	English.	Austrian.	Bavarian.	American.	Defendants'.
				1st. Neutralization of the ferments by chemicals.	1st. Neutralization of the ferments by the use of ice.
1st. Complete washing.	1st. Complete washing.	1st. Perfect washing.	1st. Washing and crushing.	2nd. Complete crushing and bruising of all the fat cells by millstones.	2nd. Thorough hashing, crushing, and comminution of the fat to a pulpy mass.
2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice, or with 30 p. c. of an alkaline pepsine solution.	3rd. Concentrated digestion at 103° F. with 2 p. c. of artificial gastric juice until the fat is melted; also an increase of temperature until the oil is completely separated at a low temperature.	3rd. Heating until the fat is melted, and then raising the temperature until the oil is entirely separated at 120° to 130° F., this being a low temperature for rendering.
3rd. Cooling to complete solidification, so as to be cut into cakes half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into pieces half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into slices about half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into slices one inch thick.	4th. Crystallization of stearine in mass at uniform temperature of 86° for soft and 98° for hard fats, leaving the oil fluid.	4th. Crystallization of stearine in mass at uniform temperature of 84° to 86° F., leaving the oil fluid. The fats used are soft fats.
4th. Pressing between hot plates to melt out the oil.	4th. Pressing between hot plates to melt out the oil.	4th. Pressing between warm plates to melt out the oil.	4th. Pressing between hot plates to melt out the oil.	5th. Extraction of the fluid oil by a centrifugal (aided, if necessary, by a press) at the temperature of the crystallization as above.	5th. Extraction of the fluid oil by a press at the temperature of the crystallization as above.

347 "Complainant's Exhibit Morton Comparison Table.

A. F. SMITH,
Notary Public.

September 12, 1884."

Adjourned until September 13, 1884, 10 o'clock a. m.

Prof. HENRY MORTON'S examination continued:

C. Q. 33. You have asserted that there is a distinction between the American and foreign patents because you find different proportions or quantities of gastric juice in the artificial digestion set forth in the patents. Does not the gastric juice exert a digestive action in both cases?

A. It undoubtedly exerts a digestive action when made and used as directed in the foreign patents, and it may exert a slight one when made and used as directed in the American patent. In the latter case, however, the action must be exceedingly small, both on account of the small quantity of the gastric juice employed and its feeble character.

C. Q. 34. But has it not appeared in your former deposition that a very minute quantity of gastric juice is capable of acting upon a large quantity of material, and without material diminution of its power, per example in Kirk's Physiology, which you consider a good authority, and which is quoted in cross-question 20 as follows: "And that pepsin acts in some such manner appears probable from the very minute quantity capable of exerting the peculiar digestive action on a large quantity of food and apparently with little diminution in its active part." Also your testimony in that deposition as follows: "Cross-question 24. Please explain what is termed the 'ferment action' of the gastric juice upon substances with which it is brought in contact in the stomach. A. This ferment action belongs to a class of actions denominated catalytic, of which we have numerous examples, both in inorganic and organic chemistry. It may be described in general terms as a chemical action between two or more substances, brought about by the presence of a third, which

348 third body may or may not enter into the reaction, but, whether it does or not, remains itself unchanged at the end and does not seem to suffer any loss or diminution. * * * Similarly when a portion of material known as pepsin, and which may be separated from gastric juice, is brought in contact with some such animal matter as meat, the white of an egg, or the like, together with a quantity of dilute hydrochloric acid, the animal matter referred to will gradually dissolve, being converted substantially into compounds known as peptone and para-peptone, and this action will continue indefinitely, a given amount of pepsin being able in this manner to convert any amount of such animal matter, provided the products of the change are removed and the supply of dilute acid maintained. For this reaction the temperature must be maintained within moderate limits, not going very much above 100° Fahrenheit or as low as that of freezing. During this action the pepsin appears

neither to increase or diminish in amount nor to suffer any loss of power."

A. It has nowhere appeared in my deposition, nor anywhere else, as far as I know, that a very minute quantity of gastric juice is capable of acting upon a large quantity of material. Your question and references show that you do not appreciate the difference between pepsin and gastric juice, which difference is of the utmost importance in the present connection. Pepsin, which is one of the constituents of gastric juice, has, as I stated fully in the testimony you have quoted, a practically unlimited power of converting animal matter into peptones and para-peptones, provided the products of the reaction—that is, the peptones and the para-peptones—are from time to time removed and a fresh supply of dilute hydrochloric acid is introduced. Under these conditions a very small quantity of pepsin, such as is present in even the strongest natural gastric juice, may be caused to act over and over again indefinitely or will cause the conversion of a large amount of animal matter, if at the outset it is mixed with a large quantity of dilute hydrochloric acid; this is, however, a totally different thing from saying that a small amount of jastric juice will convert a large amount of animal matter into peptones and para-peptones. Gastric juice consists of a mixture of pepsin with one or more various acids and water (the most powerful acid is hydrochloric), and if a small amount of
349 such a mixture be used it very soon ceases to act on animal matter. Nothing that I have before said is in the least degree inconsistent with the above statements, but, on the contrary, to a great extent, what I have just said is fully stated or implied in the passage quoted by you, but as my attention is here specially drawn to the matter, I will quote from Foster's Physiology, on page 192, a passage which fully supports the views which I have just expressed: "Digestion most rapid with dilute hydrochloric acid of (2 p. c.) (the acidity of natural gastric juice). If the juice contains much more or much less free acid than this, its activity is visibly impaired; other acids—lactic, phosphoric, etc.—may be substituted for hydrochloric; but they are not so effectual, and the degree of acidity most useful varies with the different acids. The presence of natural salts, especially sodium chloric, in excess is injurious. The presence in a concentrated form of the products of digestion hinders the process. If a large quantity of fibrine be placed in a small quantity of juice digestion is soon arrested; on dilution with a normal hydrochloric acid (2 p. c.), or if the mixture be submitted to analysis and its acidity be kept up to the normal, the action recommences." It may be desirable here to explain that analysis is a process by which the peptones and para-peptones can be, as it were, filtered off or separated from the pepsin by the peculiar action of a partition made of parchment paper, which will allow the peptones and para-peptones to pass through, but will retain the pepsin. I would also explain that the two-tenths of one per cent. of hydrochloric acid above mentioned refers to absolutely pure acid, and that where commercial acid is used we need a proportionately larger amount in accordance with the existing dilution of the acid.

C. Q. 35. As I understand, pepsin is the active principle or agent in gastric juice, which in the presence of the natural acid in the gastric juice produces the ferment action in digestion, and that it is always present in gastric juice; nor do I regard two-tenths of one per cent. of pure hydrochloric acid as a large quantity or proportion. The distinction you seek to build up between the action of pepsin and the action of gastric juice, as set forth in your
350 former deposition, not only does not appear to be supported by the passage you have cited from Dr. Foster's Physiology, but upon the same page, in the immediate context preceding the passage, he makes substantially the same assertion about the power of a given amount of gastric juice to digest an almost indefinite quantity of fibrine under proper management, that was made in your former deposition regarding pepsin, as follows: "Since, as will be seen, a given amount of gastric juice may by proper management be made to digest an almost indefinite quantity of fibrine if sufficient time be allowed, we are obliged to take, as a measure of the activity of a specimen of gastric juice, the rapidity with which it dissolves a given quantity of fibrine. The greater the surface presented to the action of the juice, the more rapid the solution; hence minute division and constant movement favor digestion." Now, if your theory be correct, that the subdivision of the fat by millstones in the American patent is finer than that by the use of rolls, the gastric juice could act better on the fat in the former case, and the finer the subdivision the more digestion would be accomplished by a given quantity of gastric juice in a given time, would it not?

A. At the opening of your question you state that you understand pepsin to be the active principle in gastric juice, which in the presence of the natural acid in the gastric juice produces the ferment action in digestion, and that you do not regard two-tenths of one per cent. of pure hydrochloric acid as a large quantity or proportion. If this statement has any reference to the subject in hand it exhibits a failure to appreciate the fundamental facts of the subject of gastric digestion, and therefore I will briefly state them: If a portion of animal matter is placed in contact with pure pepsin—that is, pepsin free from any acid—no digestive action whatever will take place. In order that pepsin should exhibit its power in this connection a certain amout of hydrochloric or other acid must be present, and this proportion must not much exceed two-tenths of one per cent. of the water, which must also be present in very considerable quantity. This two-tenths of one per cent. of hydrochloric acid or its equivalent is therefore by no means a small quantity as compared with the pepsin, but, as nearly as I recollect, is a
351 considerably larger actual quantity in any gastric juice, a larger quantity than that of the pepsin present in any gastric juice. It is, moreover, just as essential to the activity of gastric juice as is pepsin itself, and therefore, while we may say that in a certain sense pepsin is the active element when the hydrochloric acid is present, we might also say, with equal propriety, that the hydrochloric acid was the actual element in the presence of the pepsin. That you fail to perceive the entire agreement between the passage

from Foster last quoted by me and statements quoted by yourself from my previous deposition in nowise affects the manifest fact of their agreement, and the passage you have quoted from Foster will be also perceived to contain nothing at variance with what I have referred to, especially when it is noticed that this passage, as you correctly state, immediately precedes that quoted by me, in which is described the "proper management" (by dyalysis and the addition of hydrochloric acid) for maintaining the activity of the pepsin in a given quantity of gastric juice. Bearing this in mind, it is at once perceived that the following expression, "since, as will be seen, a given amount of gastric juice may, by proper management, be made to digest an almost indefinite quantity of fibrine," is entirely consistent with the subsequent expression, further down on the same page, which reads as follows: "If a large quantity of fibrine be placed in a small quantity of juice, digestion is soon arrested, or dilution with the normal hydrochloric acid (2 p. c.), or if the nuture be submitted to dyalysis and its acidity be kept up to the normal, the action recommences."

In other words, this author manifestly does not stultify himself by asserting at the top of a page in general terms what he specifically denies at the bottom. These preliminary statements of your question being disposed of, I now pass to its final clause, in reply to which I state that, under the conditions you there state, the gastric juice present, if it were of an actual character, would very quickly saturate itself with peptones and para-peptones, and would then cese to act. In other words, as I have over and over again stated in the present case, the subdivision of the material acted upon
352 would favor the rapidity of action of a given quantity and quality of gastric juice, but that with the quantity and quality indicated in the American patent the amount of animal matter acted upon by the juice would be very small, both on account of the minute quantity of such juice present and its small power of activity consequent upon its composition.

(Recess.)

C. G. 36. The agreement between Dr. Foster and the citations from your former deposition is very manifest, notwithstanding "gastric juice" is spoken of in one case and "pepsin" in the other case. But do I understand that you take issue with the proposition regarding digestion that "pepsin" is the active principle or agent in gastric juice which in the presence of the natural acid in the gastric juice produces the ferment action in digestion, especially in view of the following statement in Scherlemmer's Chemistry, which you have brought here to-day, and which reads as follows: "Pepsin is a substance resembling mucin, and is found in the gastric juice. It possesses the specific property to convert proteids in the presence of an acid into soluble modifications called peptones"?

A. As you introduced your question by a statement which seems to me inaccurate and misleading, I feel called upon to correct it, in the first instance, before replying to the properly interrogative portion of your interrogatory. It is not a fact that, comparing the

statements of my former deposition and statements quoted from Foster's Physiology, pepsin is referred to in the one case and gastric juice in the other as equivalents in the manner which your statement suggests or implies. The distinction between gastric juice and pepsin is clearly brought out in my previous deposition and in the quotations from Foster. Passing next to your question proper, I have no fault to find and have made no objection to the statement or proposition that pepsin is the active principle or agent in gastric juice which in the presence of the natural acids in the gastric juice produces the ferment action in digestion, provided such a statement is combined with a recognition of the equally essential character of the acid constituent of the gastric juice, and is not under-
353 stood as implying that pepsin and gastric juice are substantially the same thing. Understood in this way, the statement just quoted, though not very happy as an expression of the facts, is not incorrect, and substantially agrees with the more full and accurate statement you have quoted from Scherlemmer.

C. Q. 37. It is true, is it not, as another consideration in the case, that no portion of the energy of the gastric juice is expended upon the fat proper, by which I mean the fat globules in the mass of fat, but it effects only the tissue in the fat, the relative proportion of which to the fat proper has doubtless been observed by all in the small quantity by weight of the "cracklings" or "scraps" remaining after a kettle of fat is rendered?

A. The gastric juice has no action upon the pure fat, but only on the animal tissues, which constitute a relatively small portion of the entire mass.

C. Q. 38. What is the volume of a "liter" of water?

A. The volume of a liter of anything is about one quart, or one thousand cubic centimetres exactly.

C. Q. 39. Now, Professor, I'll call your attention to the fact that in Mége's foreign patents—for example, in the Bavarian patent, where the proportions are given—Mége directs that the gastric juice which is obtained from two stomachs (pig or sheep) is applied in the digestion of one thousand kilos or kilogrammes of fat, which is in the proportion of 500 kilogrammes of fat to the gastric juice obtained from one stomach of a pig or sheep. On the other hand, in the American patent the gastric juice from one-half a stomach of a pig or sheep is contained in three liters of water. To one hundred kilogrammes of fat two of these three liters are applied, making two-thirds of the gastric juice obtained from one-half of a stomach, or in the proportion of three hundred kilogrammes of fat to the gastric juice obtained from one stomach, whereas in the Bavarian patent 500 kilogrammes of fat was treated with the gastric juice obtained from one stomach; are these figures correct?

A. The figures as figures are correct, but the statement with which you connect them is both incorrect and misleading. In neither case is the gastric juice referred to obtained from a stomach of a
354 pig or sheep; all that is obtained from a pig or sheep in either case that is of any importance in the production of the gastric juice is the pepsin; all the rest of the gastric juice is made up of

water containing in solution acid or some salt intended as a substitute for acid. It has been, I think, very completely shown in several preceding answers that the limit of efficiency in a gastric juice does not depend upon the amount of pepsin in it, but upon the amount of water and acid or its equivalent with which it is mingled. For this reason your statement is misleading, because it omits to state that in the Bavarian patent for every thousand kilos or kilogrammes of fat three hundred kilos or kilogrammes of water containing the pigs' stomachs, etc., are to be added, and that therefore the amount of gastric juice would be thirty per cent. of the fat in the Bavarian process, while it is only two per cent. in the American process. It must also be remembered that this is not the only process of the Bavarian patent, but is only an alternative process.

C. Q. 40. Then, as matter of fact, is the amount of "pepsin," which is all you now suddenly regard as all that is of any importance, together with the natural acids making up the gastric juice obtained from the stomach of an animal by maceration, etc., and applied to the fat, is in the proportion in the American patent of five to three applied in the Bavarian patent, while the amount of water appears to be much larger in the Bavarian than in the American patent?

A. As usual, you begin your question by a misstatement in this case under the thin disguise of a question. The misstatement consists in the following: You say pepsin, which is all you now suddenly regard as all that is of any importance. I have made no such statement as this nor anything to warrant it, but, on the other hand, have stated what is precisely contrary to this assertion. Pepsin is not now suddenly regarded by me as all that is important in this connection; but what I have stated is that all which is supplied by the stomach of a pig or sheep which is of value in the manufacture of gastric juice, as set forth in these patents, is the pepsin. The amount of natural acid present in the stomach of a pig or sheep, when properly cleansed for such use as this, is entirely insig-
355 nificant, and, if it were attempted to make a gastric juice without the addition of dilute acid or its equivalent, such attempt would be an utter failure for any practical purpose. In the next place, as I have already pointed out, gastric juice consists of two things at least, pepsin and dilute acid, which is in no respect to be regarded as acid and water, but as an acid mixture containing, in the case of hydrochloric acid, two-tenths of one per cent. of true acid, and with other acids other proportions. Unless both of these are present there is no gastric juice. To talk of the natural gastric juice obtained from the stomach of a dead animal is simply to display ignorance of first principles. Natural gastric juice is always and only obtained from the stomach of a living animal, and where the gastric juice is made by macerating the stomach of a dead animal in dilute acid or its equivalent it is simply absurd to speak of it as made from the stomach of a dead animal in any way which excludes the dilute acid or its equivalent from equal rank and importance as an essential part of the product. It would be, therefore, as absurd, as misleading, to say that in the Bavarian patent as com-

pared with the American patent the proportions of gastric juice were as three to five. The real and efficient proportions are, as I have already stated, two per cent. in the American patent, thirty per cent. in the Bavarian patent.

Further cross-examination postponed to Thursday, September 18th, at 11 a. m.

SEPTEMBER 18th, 1884.

Met pursuant to adjournment.
Parties present as before.

Further adjourned to 1.30 p. m.

Cross-examination of Professor MORTON resumed:

C. Q. 41. The question is a simple one, and again I ask you, Is not the amount of pepsin, together with the natural acids, much or little, obtained from the stomach of an animal by maceration, etc., and applied to the fat in the proportion in the American patent of five to three applied in the Bavarian patent, while the amount
356 of water appears to be much larger in the Bavarian than in the American patent?

A. The subject inquired about is a simple one, though your previous question considerably obscured its simplicity by complex and, in the respects I have pointed out, inaccurate statements. It is, of course, perfectly plain that one of the methods of the Bavarian patent directs the use of an amount of calves' or pigs' stomachs which, as compared with the amount of similar material directed in the American patent, is as three to five, equal amounts of fat being treated in both cases. These stomachs will contain proportionate amounts of pepsin, which would be practically important, and also proportionate amounts of such natural acids as might exist in the stomachs, and which would be practically unimportant. The amount of water directed to be used in this particular method of the Bavarian patent would also equal thirty per cent. of the fat treated, while the amount of water in the American patent would be only two per cent., and when it is remembered that this water acts in these two patents as the solvent for acid salts, and that it is an essential constituent in all digestive actions, such actions being limited in their extent by the amount of such water present, its importance as a factor in the operation will not be overlooked.

C. Q. 42. Do you agree with Professor Chittenden in his statement regarding the effect of such a large quantity of water, in answer to direct question 9 in his deposition, as follows: "In the first place, it is a point well understood in physiological chemistry that the action of water or weakly acid fluids at the temperature of the animal body tends to convert cullaqueous matter of connective tissue into a body or bodies akin to glue or gelatine. Thus in following out the specification of the foreign patents, where the fatty matter, with its admixture of fibrous tissue, is exposed to the action of such a large quantity (from 30 to 67 per cent.) of fluid, at about 100° Fahrenheit, I should expect to have developed and retained by the fatty matter

deleterious products, thus rendering the latter exceedingly objectionable for any delicate use."

A. I agree with Professor Chittenden as far as his state-
357 ments relate to physiological actions or those of physiological chemistry, because I understand him to be an expert in physiology and physiological chemistry, whereas, as I have stated at the outset, I myself make no claim to any special knowledge in those subjects, having only studied them in a general way in connection with the subject of general chemistry. As far as my own knowledge goes, I should not have anticipated that the products of a gelatinous nature reduced by the action of a dilute acid or acidulated water directed to be used in these foreign patents on the coalloyed bodies would have remained with the fat, but I should have expected it to have separated out with the water material when the melted fatty substance was allowed to stand at rest.

C. Q. 43. In the institution with which you are connected your teaching or lecturing is in the department of physics, is it not?

A. Such lectures as I give are on subjects connected with physics.

C. Q. 44. As part of your second point of alleged difference between the American and foreign patents you assumed the position on your direct examination, if I understand you aright, that step III in the American patent, entitled "Concentrated Digestion," is composed of "two distinct steps"—one an artificial digestion and the other the subsequent rendering of the fat by heat. On the other hand, is it not the natural and obvious meaning of the passage "When the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed one hundred and three degrees Fahrenheit, and thus no taste of fat is produced," and that this preliminary direction is controlling during the whole process in which "he melted it," and that Mége then commences at the beginning and gives first practical direction for the preparation of the artificial gastric juice, and then directs how it shall be applied and the conditions to be observed, as follows: "For this purpose he threw in the washtub containing the artificial gastric juice about two liters per hundred kilogrammes of greasy substance. This gastric juice was made with the half of a stomach of a pig or sheep well washed in three liters of water containing thirty grammes of biphosphate of lime. After a
358 maceration during three hours he passed the substance through a fine sieve and obtained the two liters which are necessary for one hundred kilogrammes. He slowly raised the temperature about one hundred and three degrees Fahr., so that the matter shall completely separate. This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter. When the liquid does not present any more lumps he threw into the said liquid one kilogramme of sea salt (reduced to powder) per hundred kilogrammes of greasy matter. He stirred during a quarter of an hour and let it set until obtaining perfect limpidness." The limitation that the heat must not exceed one hundred degrees Fahrenheit applying throughout step III, and while the temperature was slowly raised to about 103° Fahr., just as in the corre-

sponding step in his original French patent, the corresponding limitation of temperature to the animal temperature was directed to be maintained until the same result was accomplished, as follows: "The whole is kept at the temperature of the animal body until all the molten fat appears in a clear layer on the surface, and the clear fluid fat is poured into vessels with an opening at the bottom, etc." And in the English patent: "And the whole is kept at the temperature of animal heat until all the dissolved fat appears limpid on the surface and the fatty body, liquid and limpid, is poured into boxes, etc."

A. I do not agree with you at all as to what you assert to be the natural and obvious meaning of the passages referred to in the American and foreign patents when taken in their natural connection. In the first place, I think it is perfectly manifest that the American patent refers not to one, but to two distinct steps, while the foreign patents as clearly refer to but a single step. Thus in the American patent it is, in the first place, stated that the fat is submitted to digestion, "so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced." The absence of a fatty taste is here referred to simply as the necessary consequence of the artificial digestion at this precise temperature or one below it.

359 There is no suggestion that the temperature is to be regulated so as not to produce a fatty or any other taste. All that we are here told to do is to conduct an artificial digestion at or below a temperature well known to be a limiting one for such a process. Having gone so far, the writer interrupts himself to state the proportion of gastric juice required and the method of its preparation, and having done this he then resumes his description of the process by telling us how to secure the complete separation of the greasy matter by slowly raising the temperature, not to a given point, but to about a given point, so that the matter shall be separated and yet not have any taste of fat, but, on the contrary, a taste which he describes as that of molten butter. Here, manifestly, the temperature to be used is not specifically limited to any number of degrees, but only by the two conditions—first, it must be sufficient to secure the entire separation of the greasy substance, but, in the second place, it must not be so high as to produce any taste of fat. Comparing this, in the first place, with the French patent, it is manifest at a glance that there is here no such division as appears in the American patent. We are simply told to immerse the fat in the gastric juice "at the temperature of the animal body until all the molten fat appears in a clear layer on the surface."

This is all there is as to this step, which is then complete in the one operation, strictly limited to the temperature of the animal body, which secures the most perfect digestive action, and it is manifestly this action alone which is relied upon to obtain the separation of the molten fat from the rest. This separation, however, is not a perfect one—that is, it is not a complete separation of all the fat in the mass, for the description immediately continues as follows: "It is allowed to settle, and the sediment is submitted to another operation in order to extract all the fat."

Comparing this with the American patent it is, I think, perfectly manifest that while the foreign patents contemplated digestion alone as the means of separating the molten fat from the tissues and secured this by repeating the operation twice (taking off at first so much of the fat as was separated by the first treatment and then getting off what was left by a further digestion), the American
360 patent contemplates only one digestion, and then a complete separation by the gradual rise of temperature within the proposed limits. Any one who is familiar with the rendering of fats will at once recognize the clear reference to these two successive steps of melting by digestion and complete separation by a gradual rise of temperature. If finely comminuted fat is heated to a temperature of 103° Fahrenheit it will become completely melted—that is, fluid; but this will be a milky fluid, from which the pure oil will very slowly and imperfectly separate. To secure this separation promptly a higher temperature must be applied, and when this is done such a separation is both rapid and complete. The English patent being substantially identical with the French, I need not repeat, as all I have said of the French applies equally to it.

C. Q. 45. Incidentally I will state that I am informed that the manufacturers of oleomargarine in this country do not attempt to separate all the fat from the tissue, which could only be done at a higher temperature than that employed, and that operation of the fat is permitted to remain with the tissue in the sediment, and that this residue of tissue and fat is taken to the tallow-room, where the remaining fat is removed in the form of tallow; am I correctly informed on this point?

A. I am perfectly aware of the fact that there is a small portion of fat entrapped in the tissues which is subsequently extracted at a high temperature or under pressure and sold as tallow, but this will be equally true with the tissues left from the fat treated as directed by the foreign patents, and has nothing whatever to do with the distinction pointed out in my last answer between the process of the foreign patents, which extract all the fat that can be obtained fit for as a food product by a repeated treatment of gastric juice, and the American patent, which secures the same result by a single digestion and a subsequent alteration of temperature.

C. Q. 46. Does not Mége also in his Bavarian patent (taken out four years after the French and English patents and the same year he applied for and obtained his American patent) contain the same limitation of temperature at which the process is to conducted to the animal temperature till the same result is secured, as fol-
361 lows: "This mixture is then kept at the temperature of the animal body (by means of steam pipes or otherwise) until all the molten fat has been dissolved by the pepsin or stomachs and appears in a clear layer on the surface," and "the fluid fat is poured into vessels which have an opening," etc.?

A. In this case, as before, you omit from your quotation that portion which states that the process is to be repeated to extract the fat from that part which does not "appear in a clear layer on the surface." This omission is important, because the passage omitted

limits the meaning of the word "all," used in the passage quoted, and shows that, as a matter of fact, the thing referred to is not "all" but only part of the fat either contained in the mass or extracted for use in the preparation of the oleomargarine product; otherwise your statement is correct.

C. Q. 47. Without regarding the relative amount of the fat produced, the same direction to limit the temperature to the animal temperature is given to be maintained until the same result is produced, to wit, until the fat is molten and dissolved and the fluid fat appearing clear and limpid, is it not?

A. It is in fact; this patent is substantially identical in this respect with the English and French patents to which I have already referred.

C. Q. 48. And yet you don't think that it is like the American patent, which also imposes the limitation of the animal temperature, to wit, so that the heat does not exceed 103° Fahrenheit, and which is stated to produce the same result, to wit, a fluid fat "with perfect limpidness"?

A. In the first place, I do not find that the American patent imposes the same condition as to temperature found in all these other patents at the corresponding point, namely, where the separation of the pure greasy matter from the membrane is secured. The place where the American patent limits the temperature to animal heat is in the preliminary digestion, where it indicates the separation of the clear fat; its only limitation is to such temperature as shall secure entire separation without producing an objectionable taste. I also find that in the foreign patents the limpid fat obtained as a pro-
362 duct is the result of two successive digestions in place of one digestion and a subsequent increase of temperature, and I therefore, as I have already repeatedly pointed out and explained, do not think that this part of any of the foreign patents is like the corresponding part of the American patent.

C. Q. 49. But the clear, limpid layer of fluid fat described as resulting from the digestion is not subjected to a second operation or digestion, but it is the sediment which is subjected to the second duplicate operation, as expressed in the French patent as follows: "It is allowed to settle and the sediment is submitted to another operation," is it not?

A. A portion of clear fluid fat is obtained as the result of the first digestion. This being removed, what is left is submitted to a second digestion, from which another portion of clear fluid fat is obtained. Having gone through with this process and knowing the slowness which the fluid fat separates at this temperature, I can fully realize the necessity of this repetition and clearly appreciate what this description means, which is not that the greater part of the fatty matter separat.s on the first digestion, and that then a little more is recovered from the sediment, but that the second treatment is just as important in the amount of product obtained as the first, if not more so.

C. Q. 49½. Professor, it appears from your former deposition, cross-question 41 *et seq.*, that prior to your being retained by the present

owners of the Mége patent you had been retained as an expert in behalf of Rafferty and Williams in connection with a suit brought by the owners of the Mége patent against them for an alleged infringement of that patent, and that in connection with that suit you made experiments with beef fat with reference to the Mége patent, five or six, at your own laboratory, and three or four at the works of Rafferty and Williams. "In experiments at my laboratory I operated upon about a pound at a time. At the works of Rafferty and Williams the quantities treated were from five hundred to one thousand pounds," and that in none of these experiments "did the temperature at any time during the process or toward the close of the process rise above 103° Fahrenheit," and you stated in answer to cross-question 77 "that the objects of these experiments
363 were simply to determine whether fat such as was then used by Rafferty and Williams could be rendered at a temperature not above that stated in the Mége patent, as this simply required that the temperature should be kept below this point. It may have happened that I did not make any memorandum or record of the temperature, but simply observed that it did not get above this point." How happens it that you now think that the temperature "stated in the Mége patent" is not limited to 103° Fahrenheit, but at that time and under other circumstances you adopted the theory that the temperature specified in the Mége patent was limited to 103° Fahrenheit, and in practice in your experiments you accordingly limited the temperature at 103° Fahrenheit and "simply observed that it did not get above this point?"

A. The reason was that when I undertook these experiments I had several consultations with Mr. Charles F. Blake, who was counsel for Rafferty and Williams, and was instructed by him that in accordance with the then rulings of the Supreme Court this patent was limited to the exact temperature stated in it.

C. Q. 50. Of course, in making this investigation and those experiments with a view of testifying as an expert in that suit for the instruction of the court, you examined the patent for yourself, or did you simply prepare yourself to testify to the court in accordance with the theory of the counsel in the case, fortifying your testimony by the experiments you should have made illustrating the theory?

A. I examined the patent for myself; but, as a matter of course, accepted the assistance of counsel in forming conclusions as to the legal bearings of expressions, and was to a certain extent guided in my experiments by the conclusions thus reached, so that I did not make experiments which appeared to have no relation to the actual matter in dispute.

Adjourned to September 19th, at 10.30 o'clock a. m.

364 SEPTEMBER 19, 1884.

Met pursuant to adjournment.

Cross-examination of Professor MORTON by Mr. DIXON resumed:

(Counsel for defendant consents that the trial may be made of

taking the balance of the testimony by a stenographer, provided, of course, that the notes are transcribed and produced at the opening of each session of the testimony taken at the previous session, so that counsel may be able to read it.)

(Counsel for complainants requests counsel for the defendant to proceed with the cross-examination without any of these irregular and unfounded-in-law suggestions and arguments that appear upon the record, and states to counsel for defendant that upon the completion of his cross-examination the deposition of this witness will be signed without furnishing to counsel for the defendant a copy of the testimony taken by the stenographer without it is perfectly convenient so to do.)

(Counsel for the defendant sees no occasion for the above remarks of counsel for complainants, as the condition made for the use of a stenographer, that the notes of the examination should be written out so that the counsel can read them, is entirely reasonable and proper.)

(Complainants' counsel requests the stenographer to enter as a matter of record and keep track of the time consumed be defendant's counsel in asking his questions.)

(Counsel for defendant has no objection to the stenographer's compliance with this peculiar request, if he will also take down the time occupied by the witness in answering the questions.)

C. Q. 51. As you have now adopted the theory that step II in the American patent, entitled "Concentrated digestion," consists of two distinct steps, one an artificial digestion and the other a subsequent process, described in the patent in the single sentence, "He slowly raised the temperature to about 103° F., so that the matter
365 shall completely separate," will you explain why it is that in practice, when you a few days ago, as you claimed, followed out the process of Mége's American patent at Brighton, Massachusetts, you applied the direction about slowly raising the temperature to what you term the first step of the process set forth in step III, as stated by you in your answer to direct question 8, as follows: "In the first place, there was prepared a quantity of gastric juice, according to the directions of this patent—that is, half of a stomach of a pig, which had been well washed, was chopped up and added to three liters of water containing thirty grams of biphosphate of lime. This was macerated for three hours at a temperature a little under 103°,F.—that is, between 100 F. and 103 F.; at the end of that time it was strained through a fine sieve, and two liters of the strained liquid were mixed with two hundred kilos of finely hashed fat, which had been thoroughly washed in cold water. This mixture was gradually raised during two hours to a temperature of 103° F." Thus the fat was put in the kettle at 1.50 p. m. At 2.40 p. m. its temperature was 86° F., at 2.50 its temperature was 90° F., and at 4 o'clock its temperature was 103° F. If the direction about slowly or gradually raising the temperature did not apply to the artificial digestion limited to 103° F., and was not descriptive of the

methods and conditions under which the gastric juice was to be applied in that digestion?

(The stenographer notes that the counsel has taken twenty minutes to put the question.)

A. The only explanation required to your question is the statement that you have inaccurately represented the matter. What I did was to carry out the directions for the digestive process set forth in the patent in the following words: "When the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed 103° F." It was these directions, and these alone, that I followed in the part of the operation, a description of which you have quoted from my direct testimony. The directions here are not that the material is to be heated for a certain time at 103°, but that it is to be melted by an artificial digestion, so that the heat does not exceed 103°. Starting with fat taken out
366 of ice water, it, of course, would be manifestly impossible that it should attain a temperature anywhere approaching 103° immediately, and in this experiment the temperature was raised as rapidly as possible consistently with the avoiding all risk of overheating any part of the material acted upon. Further on in my original deposition I have stated how I followed out the second part of the process, included in a paragraph consisting of many sentences, and not one, as incorrectly stated by you, headed "concentrated digestion." No one reading this answer would for a moment fall into the error of misunderstanding it and drawing the false impression which you have endeavored to convey by a garbled extract.

(The stenographer notes that the answer takes three minutes.)

C. Q. 52. And then it appears that you turned on the steam into the jacket, raising its temperature to 160° F., and then it took only twenty-five minutes to raise the fat to the temperature of 120°, does it not?

A. It does.

C. Q. 53. I meant to have asked you yesterday, in connection with other points, if it was not a fact that in the industrial operation of making oleomargarine, as it is called, where a hasher is used, the fat is fed to the hasher while dripping with water, in which it has just previously been immersed, and that in the spout which conducts the fat into the melting kettle there is a little rivulet of water flowing down almost constantly with the fat, and that a considerable quantity of water flows into the melting kettle along with the fat in the practical operation.

A. Your statement is true, with the exception of a little rivulet of water, which is rather a strong expression for a stream which, at the most, is not more than a quarter or an eighth of an inch thick; otherwise your statement is correct.

C. Q. 54. What is the usual capacity of the rendering kettles?

A. About a ton and a half, I should say, when quite full.

C. Q. 55. About how long does it take to fill this kettle with pulpy fat from the hasher running directly into the kettle?

367 A. About an hour.

C. Q. 56. Passing now to the third point of alleged differences between the American and the foreign patents in your present theory, I will ask you if Mége is correct in his statement that the effect of the presence in the fat of the natural quantity of stearine, as set forth, for example, in the Bavarian patent, as follows: "Pressure. This operation is intended to separate the hard constituent which makes the fat granular congeal rapidly and stick to the palate."

A. Substantially.

C. Q. 57. Have you ever separated stearine from oleomargarine stock by the means set forth in the American patent, to wit, by "a centrifugal machine called hydro-extractor?"

A. I should first point out that this is not the only means set forth in the American patent, since the use of a press is there also indicated. I have, however, never used a centrifugal for this purpose.

C. Q. 58. The use of a press is only specified as an expedient sometimes used subsequent to the operation of the centrifugal machine as follows: "However, during certain seasons there are animals which produce crystals of stearine soft enough for rendering necessary the stroke of a press as a last operation; but in this case this operation has little importance, because it is applied only to a fraction of the product," is it not?

A. You are correct.

C. Q. 59. Then you have made your comparison between the foreign and the American patents without having knowledge of the centrifugal machine employed as the means to separate the stearine in the American patent?

A. The press being a well-known equivalent for the centrifugal at the date of this patent, I consider it quite unnecessary to use the centrifugal, the press being more convenient and also making the comparison more accurate, because identical means were then used in both experiments.

C. Q. 60. In your answer to direct question 6 you stated that after rendering the fat it was drawn off into cans, two of which
368 were only partly full. What did you do with the stock in these two cans which were only partly full?

A. It was allowed to cool until it became solid, and was then used for experiments in expressing the oil from it between hot plates.

C. Q. 61. Are these experiments the experiments mentioned by you in your answer to direct question 2, the paragraph being introduced as follows? "This general conclusion is also confirmed by experiments which I have recently made at the factory of the Commercial Manufacturing Company, at Brighton, near Boston."

A. They are.

C. Q. 62. It appears in your answer to direct question 6 that these two cans, the contents of which you used in these experiments, alleged to conform to the foreign patents, were run into a cool-room over night and next day placed in a tank of well water and then ice applied to this water. Was not this rather an extraordinary method

to conduct an experiment to substantiate your theory, when Mége, in the foreign patents, directs, on the contrary, that the fat liquid and limpid should be poured into boxes containing warm water, which are directed to be covered and the water not removed till crystallization is effected, and when it appears from the testimony of Reuben W. Reed, superintendent of that factory, at Brighton, in answer to question 9 in his deposition, that if the temperature falls a few degrees lower than 84° F. in the seeding-room that the stock does not crystallize or granulate well—in other words, violating the very conditions set forth by Mége to secure this crystallization?

(Complainants' counsel requests the defendant's counsel to point out in the foreign patents where it is stated that the melted fat should be poured into boxes containing warm water.)

(Defendant's counsel refers to any one of the foreign patents; for example, in the Austrian patent, "The fluid clear fat is poured into vessels with an opening at the bottom and containing a layer of tepid water. They are covered, and when the cooling and crystallization have taken place the water is drawn off through the opening, the vessel is inverted, and the mass allowed to fall upon a table.")

369 A. In the first place, if your quotation from the Austrian or any other of the foreign patents is continued a little further you will see the following statement in reference to the mass which has been allowed to fall upon a table from the box in which it was cooled and crystallized: "It is cut into cakes one or two centimeters thick." One centimeter is about a third of an inch; two centimeters would be two-thirds. In the other patents the thickness of the cakes is variously stated from half an inch to an inch. This clearly shows that the cooling and crystallization contemplated are such as would render the material hard and solid throughout, so that it could be cut into such thin slices as are here indicated. Bearing this in mind, the process followed out by me was in strict and exact accordance with the directions of the patent. The cool-room in which the cans were first placed was a room simply at the temperature of the air, which at this time never fell within this room below 80°, and during the day-time was even above 90°, the weather being very warm. As a matter of fact, when the contents of these cans were examined on the morning after they had stood there over night, it was found that the crystallization had taken place in a very thorough manner, so that the stearine was all crystallized out throughout the mass in granules, leaving a fluid oil. The entire mass, however, was of the consistency of mush, and if emptied out upon a table would have to a considerable extent run away, and could by no possibility be cut into slices, either half an inch or any other thickness. On this account, and the weather being, as I have stated, very hot, the cans were placed in tanks containing spring water, and ice was finally added to this water when it grew warm. These means were absolutely necessary in order to secure the condition set forth in the patent, that the material should be so cooled and crystallized as to be cut into slices of from half an inch to an inch in thickness, and the

cooling was carried no further than was absolutely necessary to secure this result. The use of ice during such warm weather has nothing remarkable about it, because, for example, we had to use large quantities of ice in what was known as the hot-room in
370 order to prevent its temperature from rising above 86° when we cooled or drained the full can which represented the process as carried out by defendant.

C. Q. 63. Can you not perceive a close resemblance between the means employed as set forth in the quotation I made from the Austrian patent and as set forth in the corresponding passage in the American patent, as follows: "He rendered the molten fat in a vessel which must be sufficient for containing it. This vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub he put water at the fixed temperature of 86° F. for the soft fats proceeding from the slaughter-houses and 98° for the harder fats, such as mutton fat. Afterward the washtubs are covered, and after a certain time, more or less long, according to the fats, the stearine is deposited in the form of teats at the middle of the oleomargarine liquid," there being in both cases warm water used and the tubs or vessels covered to retain the heat and the crystallization?

A. I quite fail to find any identity either in the means or in the result. In the first place, in the foreign patents we have tepid water brought into immediate contact with the lower surface of the fat, and then the cooling is allowed to go on, irrespective of the original temperature of this tepid water, until the whole mass is solid. Bearing in mind that the liquid fat starts at a temperature of about 103°, it is manifest that a considerable cooling is required before it can become wholly solid, so as to admit of being cut in slices. This cooling is, of course, not affected by the tepid water, but by the influence of cool air or some other cooling agent outside. In the American patent we have the fat enclosed in a vessel, which vessel is immersed in water kept at a constant temperature, which temperature secures the maintenance of the oleomargarine part of the material in a fluid state; in other words, the temperature of this water, which is to be kept at the fixed point or points indicated, allows the stearine to crystallize, as stated, throughout the mass, but maintains the oleomargarine in a fluid condition. We have, therefore, in the two cases, in the one means employed to cool the mass until it is solid; in the other case, means employed to
371 limit the cooling to such a point as shall render the stearine solid and keep the oleomargarine fluid. These means, to repeat, are a general external cooling agent, such as the air, if it can be conveniently applied at a sufficiently low temperature to secure solidification of the mass, and in the second case a jacket of water kept at a fixed temperature, such as will prevent the solidification of the mass, but will secure the maintenance of the portion which it is desired to extract in a fluid state.

C. Q. 64. Is not the temperature of the water put in this washtub fixed at 86° Fahrenheit for the soft fats and 98° for the harder fats, and is not this shown by the fact that there is no provision made for imparting additional heat by means of steam-pipes or otherwise,

but a direction given that the washtubs are to be covered, the covering being done for the obvious purpose of retaining the heat already in the water, just as in the foreign patents the vessels are directed to be covered?

A. In the American patent it is stated that the water placed in the washtubs is at a fixed temperature. This, I understand, clearly indicates that its temperature is not only as you suggest to be at a point indicated when the water is first introduced, in which case it would not be a fixed temperature but a varying one, but that this temperature in the water is to be maintained throughout the operation. It is possible that such a temperature might be maintained, provided the volume of water in the tub was sufficiently large without the application of additional heat. The fat itself, it must be remembered, is considerably above this temperature when placed in the vessel containing it, which in its turn is immersed in this so-called washtub, containing water at the fixed temperature indicated, and consequently, if the washtub contained a large amount of water and were well covered, its loss of heat by radiation and conduction might be compensated by the gain of heat which it received from the fat. At all events it is manifest in this patent that the intention is to keep the oleomargarine fluid, since otherwise it would be absurd, to expect to separate it from the stearine by the use of a centrifugal. At the opening of the passage, referring to this step of the process, reference is made to the crystallizations at unequal tempera-
372 tures as having been before used, and therefore by implication suggests that the temperature here indicated is to be not an unequal but a uniform one throughout the crystallization.

(Recess.)

(After recess.)

C. Q. 65. Then you don't think that where Mége uses the term "unequal temperatures" in this connection he has any reference to the unequal temperatures at which stearine, oleine, and palmatin crystallize, a property which is made use of in this very patent?

A. On the contrary, I consider that he refers to the process which has been before used in the treatment of tallow and also in the treatment of fatty acids.

C. Q. 66. And you don't think that the method "he contrived for this purpose," mentioned immediately following the statement about unequal temperatures, has any connection whatever or makes use of the property that stearine, oleine, and margarine crystallize at unequal temperatures?

A. On the contrary, I consider that it is of exactly this property he does make use, but that he uses means modified from those which had before been used, though all were alike founded upon the same general properties.

C. Q. 67. Then this also falls within the general rule and is founded upon the same properties of crystallizations at unequal temperatures, referred to in the opening sentence, without any implications or inferences forced into it, does it not?

A. This is founded upon the general fact that stearine, margarine,

and oleine crystallize at different temperatures, but the means of utilizing this fact indicated in this patent differ from those which had been employed to utilize the same general fact in reference to tallow and similar substances.

C. Q. 68. Although you have never separated stearine from fat with a centrifugal machine, why is it necessary "to keep the oleomargarine fluid," since otherwise it would be absurd to expect to separate it from the stearine by the use of a centrifugal?

373 A. Although I have never used a centrifugal for the particular substance mentioned, I have used it and am familiar with its use for other substances, and I know that it cannot be employed to separate one solid substance from another, but only to separate a solid from a liquid or under certain conditions one liquid from another; therefore, unless the oleomargarine were liquid, placing it in a centrifugal would manifestly be an absurd method to use for the purpose of separating it from the stearine with which it was intermingled. The only way in which the oleomargarine, if once solid, could be separated from the stearine to any extent would be by some process of melting, and this is manifestly the intention in the foreign patents, where, after directing that the mixture should be cooled until it can be cut into cakes—or, in other words, until the oleomargarine, as well as the stearine, has become solid—we are further directed to separate the oleomargarine by pressure between hot plates, the intention being, manifestly, by the use of these hot plates to melt out the oleomargarine more rapidly than the stearine, and thus to a greater or less degree effect the separation desired.

C. Q. 69. On the other hand, in the process of the defendants, as described by Professor Wheeler in his deposition in answer to direct question No. 19, the workmen took the stock from the seeders by scooping it out and laying it upon the cloth to fill the box-shaped frames, eleven inches in length, seven inches in breadth, and one and three-quarters inches in height, about to their upper surface, and instead of this stock being fluid or liquid, which are the terms you have used, he says:

"In order that it might fully do this, with his hand (the workman) he pressed and smoothed the soft mass, so that it would fill out the ends and corners of the frame, and thus take the shape of this case or mold," and yet, because, as you have stated, the press and the centrifugal are equivalents, I suppose you would not call this a different process from that set forth in the patent, in which "the stearine is deposited in the form of teats at the middle of the oleomargaric liquid," and "he caused the mixture of stearine and

374 oleomargarine to flow into a centrifugal machine, called hydro-extractor. The greasy liquid passes through the cloth, and the stearine is collected," as the two different conditions of the stock in the two cases were obviously necessary to adapt it to be worked in the one case in the press and in the other case in the centrifugal machine.

A. In the first place, I have nowhere stated that the stock was liquid. What I have stated is that it was in the condition of mush. Bearing this in mind, to any one who has seen the process described

by Professor Wheeler and who has the slightest knowledge as to the operation of a centrifugal it will be perfectly manifest that no difference whatever is required between the materials to be treated in the manner he sets forth and to be treated in a centrifugal in the manner set forth by the patent. In other words, as I have already described, the stock or mass obtained by the process of seeding is of a mush-like consistency, made up of countless crystals distributed through the mass and surrounded by a fluid oil. The entire mass can be taken out with a ladle and placed on cloths, these cloths setting in what Professor Wheeler describes as frames or boxes, for the very purpose of enabling the operator to fold up the canvas cloth with a considerable amount of this semi-fluid material in it. Were it not for these frames the material would so run and spread during the folding that a package of the proper dimensions could not be made. This mixture is, in fact, of very much the same consistency as the mixtures of sugar and molasses, which are usually run into centrifugals, and there would be no difficulty whatever in making this mass flow, as the patent describes, into a centrifugal; and, as it is not unusual for such an apparatus to have a canvas cloth, were this done and the centrifugal put in motion, then the oil would run through the canvas cloth, leaving the solid stearine inside. It is simply an evidence of lack of appreciation as to the real action of a centrifugal that leads you apparently to suppose that what is indicated in the patent where it says "the greasy liquid passes through the cloth and the stearine is collected" means that the material is so fluid as to run through the cloth without the violent action of centrifugal force developed by the rotation of the machine. In brief, the two actions are substantially identical in all respects.

375 The extraction of the oil by pressure and the extraction of the oil by the centrifugal and the condition of the material acted upon must be substantially identical for either treatment. The centrifugal after all acts by a force which is equivalent to pressure. In other words, by the rapid rotation a powerful centrifugal force or tendency is developed in the entire mass contained within the machine, by which it is pressed violently against the circumference of the rotating drum, and all that is liquid then flows or is forced by this pressure through the canvas lining of this drum, and so escapes just as the fluid portion when subjected to the pressure brought upon it in a press is forced through the canvas wrapping and escapes in that case, leaving behind it the solid for no other reason than that the solid cannot be forced through the meshes of the canvas in either case.

C. Q. 70. And yet does not Mége say that "the greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion and the crystals of stearine are entirely exhausted without the auxiliary of the presses?"

A. The expression is as you quote, and simply shows that the use of the word "all" in this case is like its previous use in the same patent, where it merely means part. If just such a mass as Professor Wheeler describes were run into a centrifugal of the usual size the pressure produced by the mass itself would cause some of

the oil to pass through the cloth, but if the greater part of the oil so passed it would show that the centrifugal was of little use. As a matter of fact, I have no doubt that the mass of the oil would only pass after the centrifugal had been started, and if any passed before it would simply be forced through by pressure, which leaves the identity of the two processes even more manifest than if it were otherwise. This is simply an instance of an infelicitous way of expressing facts very frequently met with in patents, but involves no uncertainty whatever as to the intention of the patentee or the method of conducting the process.

C. Q. 71. Or, rather, is it not the obvious and legitimate meaning of the words that the fat was in a very different state from
376 that described by Professor Wheeler in the defendant's factory, in which the workman pressed with his hand and smoothed the soft mass so that it would fill out the ends and corners of the frame, but, on the other hand, was a "liquid" which flowed into the machine, and, exactly as Mége states, "the greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion and the crystals of stearine are entirely enhausted without the auxiliary of the presses?"

A. In the first place, I would point out that Mége nowhere states that the mixture of stearine and oleomargarine was a liquid, as you attempt to imply by the use of quotation marks in connection with the word "liquid." This being premised, I will state that if I knew nothing about the process from experience I might possibly consider that there was a small variation between the material described by Professor Wheeler and that described in the patent. Knowing what I do, however, of the process, I see at once that the apparent differences come simply from the different treatments. If a material is made to flow one would speak of it naturally by words which would differ a little from those used when exactly the same material was taken up with a ladle and wrapped in cloths. The material described by Professor Wheeler was prepared under exactly the same conditions realized in preparing oleomargarine stock under my personal inspection on various occasions, and I therefore know exactly what the material was like which he has described. I know that is descriptive of such a material. It is, as I have already stated repeatedly, of a mush-like consistency, being made up of stearine granules or crystals mixed with a sufficient amount of fluid oil to allow the entire mass to run slowly, of course not limpidly like water, so that it could be made to flow into a centrifugal, and if placed in such a machine in large quantity more or less of the fluid oil would drain out of it. In other words, a material which would fulfill all the conditions of Professor Wheeler's description would also fulfill the condition stated in the patent—that is to say, it would flow into a centrifugal, a portion of the oil would run through the canvas lining of the same, and when the machine was put in motion the rest of the fluid oil would be
377 extracted, leaving the stearine entirely exhausted of fluid and oil.

C. Q. 72. Then it is not "an evidence of lack of appreciation

as to the real action of a centrifugal that leads you apparently to suppose that what is indicated in the patent where it says 'the greasy liquid passes through the cloth and the stearine is collected' means that the material is run through the cloth without the violent action of centrifugal force developed by the rotation of the machine," as stated by you in your answer to C. Q. 69, or at least some part of the material?

A. In the first place, as on many former occasions, you misquote my answer, to begin with. I stated that in my opinion it was simply an evidence, &c. In answer to your present question I should now say that it is not simply an evidence of lack of familiarity with the operation of a centrifugal to suppose what you imply in the previous question, but is also an evidence of a lack of familiarity with the process here set forth and its practical application which has led you into the misunderstanding of the process set forth in the patent and its relation to the process described by Professor Wheeler. To any one familiar with these materials and their properties there would be no such misunderstanding possible, and it would be perfectly clear that the material referred to in this patent was such a material as Professor Wheeler described, aside from the fact that the conditions under which this material was prepared, being identical, the product must of necessity have been identical; however, it might have been described.

C. Q. 73. And I suppose you will say that the material described by Professor Wheeler, which the workman with his hand "pressed and smoothed the soft mass so that it would fill out the ends and corners of the frame and thus take the shape of this case or mold" conformed strictly to the description given by Mége in the patent at the close of the preceding step: "The stearine is deposited in the form of teats at the middle of the oleomargaric liquid."

A. In the first place, I do not understand that these two descriptions are supposed by anybody to apply to the same thing.

378 The material referred to by Professor Wheeler was a mixture obtained by stirring up the contents of the seeding tanks. The material described by Mége in the passage quoted is the stearine deposited in the midst of the fluid oleine. I do not regard nor would any one familiar with the process of crystallization regard this use of the words "in the middle" as meaning that the stearine all deposited in the center of the tank and left the oleine on its walls. The word is unquestionably used as equivalent to "in the midst of," meaning throughout the mass of the oleomargarine. As a matter of fact, having seen this operation of seeding or crystallization performed a great number of times, I know that the stearine does collect in bunches or groups of crystals located at various places in the tanks, in the middle and near the sides, and that there are often spaces occupied exclusively by fluid oil, but when this material is to be separated it is always in the first instance stirred together so as to obtain a uniform mass of a mushy consistency, such as I have described.

C. Q. 74. Is it not the presence of a large proportion of stearine in mutton and beef tallow which makes them hard, and the presence of a small proportion of stearine and lard which makes it soft; and,

although you have never separated stearine by a centrifugal, would you say a hard fat from beef or mutton suet, if kept in a vessel of a temperature of about 98°, would not have stearine deposited in the form of teats in the middle of the oleomargaric liquid, and that if this mixture was caused to flow into a centrifugal "the greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion and the crystals of stearine are entirely exhausted without the auxiliary of the presses," Mége having also directed in this connection that "this vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub he put water at the fixed temperature of 86° F. for the soft fats proceeding from the slaughter-houses and 98° for the harder fats, such as mutton fat?"

A. In the first place, the relative hardness of different fats is, as a rule, due to the different proportions of stearine found in it. In the next place, if the language of this patent is interpreted with
379 the reasonable latitude which I have given it in my previous explanations, its statements are true; but if it is understood to be taken literally as to those points which I have indicated, such as the formation of stearine in the center of the tank and not elsewhere, then it is simply not true, and I say so because I have several times repeated this process, and I have invariably found that the results correspond with what I have just stated.

C. Q. 75. Is that all the answer you have to make to my question?

A. I consider this to be a complete answer. If there is any point in your question that you do not find to be replied to in my last answer, if you will indicate it to me, I will do my best to answer it more fully.

C. Q. 76. As you regard your answer as complete, I will only ask you if you have ever made an experiment in crystallization in which you found "the stearine deposited in the form of teats at the middle of the oleomargaric liquid."

A. Understanding this to mean that the stearine deposits in irregular masses, which might perhaps be called teats, here and there through the liquid, so that the mass of the liquid is filled with such formations, I should say that I have frequently, if not always, found such to be the result of cooling in the manner indicated; but if it is understood to mean that the stearine only deposits at the center of the mass, leaving the rest of the vessel filled with fluid oil alone, then I should say that I have never seen any such results.

C. Q. 77. By the first part of your answer, detailing what you have seen, do you refer to the condition more particularly described in your answer to cross-question 69 as follows? "In other words, as I have already described, the stock or mass obtained by the process of seeding is of a mush-like consistency, made up of countless crystals distributed through the mass and surrounded by a fluid oil."

A. Not exactly. What I was speaking of before was the stock as ready for the press, namely, when the contents of the seeding vessel had been stirred together. These so-called teat-like masses of stearine are, in fact, themselves made up of a multitude of minute crystals,
380 and are not, of course, blocks of solid stearine. The forma-

tion of the stearine crystals, like the formation of other crystals, is a gradual growth in which crystal attaches itself to crystal, and the resulting mass, in many cases, has a bunch-like outline, but is really made up of numerous granules or separate crystals only slightly attached to each other. When such a mass is stirred up with the mother liquor, as it is called in many cases, or surrounding fluid the individual crystals break loose from each other and the result is a mixture, which I do not think can be better described than by saying that is like mush, where we have granules of corn meal surrounded by water, rendering the whole mass, to a certain extent, fluid, and of a peculiar consistency with which every one is familiar and will recognize when the term mush is used. In the stock as ready for the press each crystal or granule is surrounded by a portion of oil, just as each grain of the corn meal is surrounded by a portion of water in the mush.

C. Q. 78. In the English patent hot plates are used in the press, while in the Austrian patent they are described as warm plates. Mr. John D. Peck, superintendent of Rafferty & Williams' factory, has testified in his deposition that the plates in their process are heated up to 85° Fahrenheit, the plates being kept in a room at that temperature as follows (C. Q. 1): "The last question refers to 'hot or warm plates.' As you conduct the process do you not have the plates which you use in the press heated up to 85° or 86° Fahrenheit, whether it be summer or winter, and the entire atmosphere in the room kept at the degree of heat? A. The room is kept at a temperature of 85° Fahrenheit; the plates are kept in the same room from the fact if the plates were colder the stock in the box or cloths would chill, checking flow." Do you agree with him in finding objection to the use of cold plates?

A. I do not understand that the testimony referred to shows that what would be properly considered hot plates were used by Messrs. Rafferty & Williams, but, on the contrary, that they used plates which were neither hot not cold, but substantially of the same temperature as the stock which was to be pressed. It is to be
381 premised, I would further say, that I agree with Mr. Peck that cold plates—that is to say, plates notably colder than the stock to be pressed—would probably be objectionable, as they would chill the stock to a temperature below that at which it was intended to press it.

C. Q. 79. As I understand the purport of your testimony, you so conducted your experiment at Brighton in illustration of your theory of the foreign patents, and by the application of ice in cooling instead of warm water, that as the result of the experiment you obtained an oleomargarine oil containing a larger proportion of stearine than that produced in this country, and having the characteristics accompanying this presence of a large amount of stearine, with its familiar taste or adherence to the palate characteristic of fat with a large proportion of stearine, and unlike butter in its physical constitution, thus producing a result very different from the result which Mége declares in his foreign patents to be the result of the process therein set forth. Thus, in the Bavarian patent he says, under the head

"Pressure: The portion which runs off is a mixture of the margarine and oleine resembling lard in composition and of about the taste of fresh butter. It melts in the mouth like butter and does not stick to the palate like beef fat." How do you explain this inconsistency between your experiment in Brighton and the results declared by Mége to be characteristic of his process in the Bavarian patent?

A. In the first place, I must say that it seems to me you do not understand, but, on the contrary, misunderstand, the purport of my testimony in many respects, to judge from the erroneous statements of your last question. I made no experiments in accordance with my theory of the foreign patents, nor have I so testified. On the contrary, I have testified that I did my best to carry out the directions of the foreign patents in every respect. In the second place, I did not substitute ice for warm water, nor is it a fact, as you suggest, that the foreign patents direct the use of warm water for cooling. The foreign patents say that a layer of tepid water is to be introduced into the vessels in which the rendered fat is to be allowed to crystallize and cool.

382 The object of this layer of water is manifestly not to cool the fat, but simply to prevent its adhesion to the bottom of the vessel, so that when it is cool and solid, on turning the vessel upside down, the solid mass will fall out and rest on the table. The reason of using the tepid water in this layer in place of cold water is manifestly not to cool the fat, but to prevent it from chilling suddenly where in contact with the water. The directions of the foreign patents, as I have repeatedly pointed out, are to allow the rendered fat to cool and crystallize until it becomes solid. This I did in every case completely, and know that the crystallization of the stearine was complete at one time, and at a later time the crystallization and solidification of the remaining substances were also complete, so that the mass when finished was sufficiently solid to be cut into slices or blocks, as the patent directed. Therefore, instead of, as you suggested in your question, making any variation in any respect from the directions of the foreign patents, I carried them out faithfully in every respect, and obtained precisely the product at this stage of the process which the patents directed. As to your further assertions, that in my testimony it is stated that the liquid fat or oleomargarine extracted by pressure with hot plates had certain peculiarities of taste and the like, it is simply the result of a failure to consult my testimony, in which I have stated nothing of the sort. What I did state was that the oil so obtained contained an excess of stearine. In this respect it differed from the product obtained by following the American patent, and in consequence of this difference it would have been, as I have stated, unfit for the preparation of artificial butter.

As to differences between the product obtained by me and the description contained in the foreign patents, I should account for any discrepancy that may exist as follows:

It is stated that, for example, in the Bavarian patent, to which you have specially referred, that the portion which runs off from the hot plates in the press is a mixture of margarine and oleine, resembling lard in composition. Every one knows that lard contains

a notable amount of stearine; therefore in this respect there would be no differences between the material described in this Ba-
383 varian patent and that obtained by me. It is further stated in the Bavarian patent that this same oil has about the taste of fresh butter. In the first place, this seems to have reference to the fluid oil, in which condition its taste in the mouth might lack the adhesion to the tongue, which is perhaps referred to in the testimony of some one else, although I have said nothing about it; but as regards this statement, that such oil has the taste of fresh butter, I can only regard it, if intended to be interpreted literally, as the result of lively imagination on the part of the patentee, for I cannot conceive how such a product as this could possibly, in a strict sense, have the taste of fresh butter. As far as I am aware, no one has ever produced, on a commercial or other scale, any product by the exact process of these foreign patents, and it is, in my opinion, doubtful whether a product having the exact properties here described could be so produced; and, if that is so, it is, of course, natural that there should be some variation between the description, which may be a theoretical one, and the practical result of the process as obtained by me.

C. Q. 80. Will you then state, now, whether the result produced by your experiment did or did not possess the characteristics mentioned by me in my previous question, such as adherence to the palate, etc.?

A. As to the adherence to the palate, I did not notice any such property. As to the other characteristics, if you will restate them, so that I may know to what you refer by the term etc., I will tell you all I know about it.

C. Q. 81. What I mean more especially is the taste and adherence to the palate, and the want of resemblance to butter, and not melting in the mouth like butter.

A. I did not notice the adhesion to the palate and did not test it in reference to melting in the mouth, as I only tested the liquid oil as it ran from the press. As regards the taste of butter, as I have already said, there was, in my opinion, no such taste about it. It resembled lard, without, however, the peculiar flavor which lard, when rendered as usual at high temperatures, always has.

C. Q. 82. Then, as I understand you now, although Mége in his patent mentions specifically the characteristic of his product, that "it melts in the mouth like butter and does not stick to the
384 palate like beef fat," and although it is well known and has, I think, appeared in former depositions that the opposite of this characteristic always accompanies any undue amount of stearine, yet for some reason you did not ascertain these important particulars regarding the product of your experiment?

A. In the first place, I do not think it appears anywhere in this testimony, nor is it the fact, that the properties you have referred to always accompany the presence of an undue amount of stearine. It is simply a question as to the quantity of stearine. With a certain amount of stearine the material will have all the physical properties of butter except, of course, its flavor. With a large amount

of stearine the material will have the properties of lard, and will not have those of beef fat, in order to develop which it will be necessary that the amount of stearine should be far greater. I have not said that I for any reason failed to test any important properties. I convinced myself by actual observation that the oil which ran from the press contained an excess of stearine. I also convinced myself by tasting it in a fluid condition that, so far as I could perceive, it contained the properties of beef fat. The only experiment I did not perform was the placing of the solidified product in my mouth, to notice whether it did or did not melt like butter. This I did not do for the simple reason that I had not time, being obliged to leave before there was time to cool this fat down and to so treat it as to get it in a proper condition for this test, which test, moreover, I regard as entirely immaterial, in view of the others which I had made.

C. Q. 83. But with reference to the first part of your above answer, did you not state in your answer to C. Q. 56 that Mége was substantially correct in his statement as follows: "Pressure: This operation is intended to separate the hard constituent which makes the fat granular, congeal rapidly, and stick to the palate"?

A. I did.

Adjourned to Saturday, September 20, 1884, at 10 o'clock a. m.

385 NEW YORK, *September* 20, 1884.

Met pursuant to adjournment.

Parties present as before.

Continuation of cross-examination of Professor MORTON by Mr. DIXON:

C. Q. 84. If the product of your experiment contains so much stearine that it adhered to the palate and did not melt in the mouth like butter, it was not a product possessing the qualities set forth by Mége as characteristic of the product of his process in the foreign patent, with its qualites of non-adherence to the palate and melting in the mouth like butter, was it?

A. As far as those properties were concerned, under the assumption of your question, it would not be the product so described.

C. Q. 85. But Professor Wheeler, who remained till the experiments were concluded, in his deposition, in answer to direct question 26, has testified upon this point as follows: "The oil obtained in both of these cases differed in appearance and also in taste from that obtained in following the process of the American patent. It was much more thick and viscid, very sticky on the tongue and roof of mouth, and felt granular or semi-crystallized," has he not?

A. As I have never seen Professor Wheeler's testimony, I am unable to say anything about it, nor do I know to what experiments he may refer in this or any other place, or whether such experiments were those which I witnessed or not.

C. Q. 86. Here in his deposition the context is as follows: "Without going into unnecessary detail, I will state that I carried on this part of the process, and in the manner alluded to in your question,

on two portions of stock. In one instance the plates had a temperature of about 100° F.; in the second instance they had a temperature of about five or ten degrees higher. In the first instance, the stock yielded in oil amounting to $80\frac{5}{10}$ per cent. and there remained in the cloths $19\frac{5}{10}$ of stearine. In the second experiment, where the temperature was about 105° or
386 110° F., the amount of stearine remaining in the cloth was $5\frac{3}{10}$ per cent. and the oil obtained $95\frac{7}{10}$ per cent. The oil obtained in both of these cases differed in appearance and also in taste from that obtained in following the process in the American patent. It was much more thick and viscid, very sticky on the tongue and roof of mouth, and felt granular or semi-crystallized;" and direct question 8 and its answer in his deposition, as follows: "Q. 8. Will you please state whether or not this night watchman was present and witnessed yourself, Professor Morton, and Chittenden slicing up with a knife certain cooled fats which you were manipulating in following the process under the Mége foreign patents at the factory of his employer last week? A. He witnessed the operation, most emphatically, as he himself performed it under our direct and immediate supervision, doing so precisely in the manner indicated in your question."

A. Assuming that what you have read occurs in Professor Wheeler's deposition, I can only say that I do not recognize either of the experiments alluded to in what you have read as being thus tried during my presence. As to your assumed quotation in reference to my being present with him, if it is supposed to be that I was present during the entire time, it would of course be incorrect, as I was here giving testimony in this case on Saturday, September the 6th, and was only present during those experiments which were made on September 5th.

C. Q. 87. Did you not state, in answer to direct question 16, that "we were engaged in these experiments together from 10 o'clock a. m., Tuesday, September the 2d, until about 6 o'clock p. m. on Friday, September 5th?"

A. I have no doubt the words quoted by you occur in my testimony, but it does not appear from that to what experiments reference is made. As a matter of fact, the time included covers the entire time in making all the experiments of rendering fat, as well as those of pressing it, which I witnessed, and, as I have already stated, I left Boston on the night of the 5th and spent the 6th here. The experiments referred to as, I presume, by Professor Wheeler in your previous questions were made on the 6th, but of course, being myself in New York at that time, and not having read his deposition, I know nothing about them.

387 C. Q. 88. Do you wish to be understood now that you did not witness the setting aside of two cans partly full of melted fat from the rendering kettle and placed in a cool-room, and with ice applied to further cool them, and then, when the mixture was thoroughly and absolutely solid, the slicing of the solid stearine into thin plates, their wrapping in cloths, and then the placing of them in the press between hot plates, with the expression of the oil

by pressure, and then observing the quality of the oil, though, as you have stated, you came away before the oil had cooled down and had been properly prepared to make the requisite test upon the palate?

A. I do not. On the contrary, I mean to testify now, as before, that I witnessed all these operations and everything that was done down to six o'clock on the evening of Friday, the 5th of September; but I decline now to allow you to make it appear that I witnessed experiments tried on the 6th, on which day I was present giving testimony in the present case in New York.

C. Q. 89. When it appears, from your answer to direct question 6, that on the 3d of September you melted the fresh fat and had it poured into cans—"the other two cans, which were only partly full, were run into a cool-room, where they stood over night"—that the next day they were placed in a tank of well water, and on the morning of the 5th ice was added to this tank, so that it took from the 3d to the 5th to prepare this fat for the press, and was not this the fat which you witnessed pressed with the hot plates on the 5th, in connection with Professor Wheeler, before you left, and which probably the next day was cool enough to test in the mouth?

A. It was a portion of the fat alluded to in your question which I saw tested on the 5th, but it was not the oil from the fat so tested which was allowed to remain over and examine the next day, about which Professor Wheeler appears to testify in the passage read by you.

C. Q. 90. How do you know that if you were not there the 6th and, as it seems, it took some days to prepare the fat ready for any experiment in the press?

A. The reason why I know that the experiments referred
388 to by you as having been testified to by Professor Wheeler were not the experiments witnessed by me is that the conditions stated by Professor Wheeler are not the conditions of the experiments which I witnessed. As to the latter part of your question, I fail to see the slightest connection between it and the subject of your question.

C. Q. 91. The connection is this: that, as it appears that it takes several days to melt the fat and get it in the requisite condition for the press, as detailed by you, Professor Wheeler could hardly melt additional fat, get it into the requisite state, run it through the press, and have it cooled, so as to test its taste, all in one day, to wit, on the 6th, after you had left.

A. I now see how such a connection should seem to exist in your mind in consequence of your apparent entire failure to understand what I have been testifying to. Two quantities of fat were prepared by me or in my presence, as I have already described, and a portion of one of these was used in my presence on the 5th, leaving an abundant amount of the same material for Professor Wheeler to use the next day. The matter is a perfectly simple one to any one intelligently following what has been stated, but, of course, like any other subject, may appear confusing if sufficient intelligence and attention are not applied to its understanding.

C. Q. 92. Professor Wheeler was present on the 5th, when the plates of solid fat were placed in the press, was he not?

A. I am not positive whether he witnessed those experiments or not.

C. Q. 93. As you made these experiments and testified about them in this case, and as they were made just before you commenced to give this deposition, ought you not to be able to remember whether Professor Wheeler witnessed them with you?

A. Not as I understand it. My business was to witness and make notes concerning the experiments themselves, and not as to the presence or absence of any one else, since such persons could themselves give the best evidence as to whether they were present or not.

389 On this account I took no special notice, and only remember that Professor Wheeler was called away to attend some business towards the end of one of the days, which, I think, was this day, but I am not certain.

C. Q. 94. Referring to lard, are you not aware, in common with the general public, that lard deodorized is used in admixture with a fine quality of creamery butter, such as Elgin creamery, and especially in Chicago, in the production of an artificial butter called butterine, which is of a very fine quality, so that it commands both in Chicago and New York a much higher price than oleomargarine butter, and, judging by this price it commands, is a very palatable article of food?

A. I know none of these facts from my own knowledge, nor do I believe that the public at large has any such knowledge as you state.

C. Q. 95. Does not oleomargarine contain stearine in its composition, and is not the "margarine" part of it composed of palmatin and stearine?

A. That is correct.

C. Q. 96. Do you wish to be understood by your answer to direct question 10 that oleomargarine is not tasteless and odorless?

A. I do mean that oleomargarine is not absolutely tasteless and odorless, but that it is entirely free from any objectionable taste and odor, in which respect it resembles good butter when melted.

C. Q. 97. On the contrary, did you not state, in answer to C. Q. 146 in your former deposition in this case, that "on the other hand, the manufacturer of oleomargarine oil obtains as his product a clear, homogeneous, essentially tasteless, and odorless melted fat separated and entirely free from tissue or products of decomposition or change of tissue and essentially free from water, though not as absolutely anhydrous as would be fat subjected to a much higher temperature?"

A. I have undoubtedly testified as you state, but I find in that nothing at all contrary to or inconsistent with what I have just stated, especially if what you quoted be read with its immediate context: "Considering the product obtained, that secured by the physiol gist was manifestly a more or less perfect emulsion resembling milk or cream, the fat in which would undoubtedly have pos-

sessed an offensive taste and odor derived from decomposing
390 organic matter (by which I do not mean putrefying, but simply decomposing in peptones, etc.), with which it had been for a long time in contact. On the other hand," etc., as you have quoted, which clearly shows that the point here brought out was not any absolute absence of taste or odor, but the absence of offensive or objectionable taste or odor.

C. Q. 98. But you would not now deny that oleomargarine, as manufactured in this country, was an essentially tasteless and odorless melted fat?

A. Understanding those words in their proper signification as meaning free from any objectionable taste and odor, either that specifically mentioned in my last answer or the tallowy taste and odor produced by rendering at high temperature, my opinion, now, on this subject is exactly what it has always been, namely, that in this sense oleomargarine, as manufactured in this country in accordance with the Mége process, is substantially tasteless and inodorous.

Redirect examination:

R. D. Q. 99. At the time of the taking of the *prima facie* case on the part of the complainants you will recollect that Professor Charles F. Chandler gave a deposition in behalf of the complainants relating substantially to the same subject-matter concerning which your deposition was then given. Will you please state where Professor Chandler is now, and also whether or not Professor Chandler, at the time of giving his former deposition, was familiar with the French, English, and Bavarian letters patent of Mége, and whether or not his opinion as to the identity and differences of Mége's foreign letters patent and Mége's American patent sued upon was substantially the same as the opinions and views expressed by you in your deposition just completed.

(Objected to as incompetent in rebuttal, and the last part of the above question is also objected to as wholly incompetent and a gross violation of all recognized rules of evidence asking at second hand about the opinions of persons not present, and only paralleled by the preceding offer in evidence by the complainants of the
391 unverified letter of George Harding, whose offices are both in New York and in Philadelphia, containing his unsworn statements in opposition to the sworn evidence of Professor Barker.)

A. Professor Chandler is at present traveling with his family in Europe, and is not expected to return until the 1st of November. At the time of making the deposition referred to, Doctor Chandler was, to my personal knowledge, familiar with the patents named, and his opinion in reference to the identities and difference in these patents was substantially identical with that expressed by me in my deposition just completed.

Recross-examination:

C. Q. 100. But your opinions are based on the experiments made by you at Boston, which were not made until this sitting was com-

menced, and while counsel for defendant was kept waiting by adjournment from day to day for over a week, as shown by the record in this case, and during Professor Chandler's absence?

A. My opinions are not based on the experiments referred to, but are based on various documents, namely, the patents referred to. These opinions have been, however, fully confirmed by the experiments made by me. As to the hardship endured by counsel for the defendant, this is a matter of which I have no knowledge.

HENRY MORTON.

Sworn to before me September 20, 1884.

ASA F. SMITH,
Notary Public, Kings Co.

Certificate filed in N. Y. Co.

(Recess.)

392 And thereupon complainants call C. GILBERT WHEELER, who, first being duly sworn, deposes as follows in answer to interrogatories propounded by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. C. Gilbert Wheeler; age, 48; residence, Chicago; occupation, analytical chemist.

Q. 2. Please state somewhat in detail what experience you have had which qualifies you to express an opinion relating to animal fats and their treatment in several forms, especially as an article for human food; and you may state, also, what experience you have had as an expert witness in patent causes, giving, if you please, in connection therewith any positions you may have held based upon your chemical knowledge and any works you may have written as an author relating to this same subject-matter.

A. I was graduated at the Lawrence scientific school in 1858, which is the scientific department of Harvard University. Subsequently, for a year, I was an assistant to Professors Cooke and Horstman, who were the professors of chemistry at that university. In 1859, in the autumn, I entered the service of the State of Missouri as chemist, and continued in that position until the breaking out of the war in 1861. In the fall of that year I went to Europe and remained there continually until the spring of 1868, studying at various universities in Germany and France and conducting researches in chemistry under the direction of Liebig, Pose, Wurtz, and others. A considerable portion of 1867 and 1868 was spent in studies at the school of medicine in Paris. Returning home in 1868, I took the chair of chemistry at the University of Chicago, which I have held up to within about two years ago. I was also at the same time elected professor of inorganic and organic chemistry at the Chicago Medical College. Within the past few years I have held the position of professor of chemistry at the Beloit College for a year or two; also have been for about the same length of time professor

of geology and metallurgy at the University of Denver, Col-
393 orado. During my years of residence abroad and since my return, I have frequently been engaged in original chemical research, especially in the department of organic chemistry, and I have read a number of papers at the German, English, and American associations for the advancement of science. A paper of mine on organic chemistry has been presented to the Institute of France and read by its president. I am a member of the German, French, and American Chemical Societies, and I have prepared two text books on chemistry—one, organic chemistry and the other medical chemistry.

During my professorship at the University of Chicago I was temporarily in charge of the chair of zoology, and at that time published a zoological chart of the mammalia, and a text book on the same subject, now in use at over a hundred institutes of learning in this country and Europe. I have during these years occupied myself more or less with the study of the fatty bodies as a part of the subject of general organic and animal chemistry, and have frequently in my laboratory been called upon to make chemical analyses and investigations relative to the fats. In general, my experience as an expert in patent causes has been somewhat extended. Of those within recent years there occur to me now "The Nickel-Plating case," "The Barbed-Wire case," "Beer-Barrel-Pitching case." Within the past year I have served as an expert in the somewhat famous "lard controversy" before the board of trade at Chicago, along with various chemical experts from Boston, New York, Baltimore, and Chicago. During that time, also, I have served as chemical expert in a suit relative to a process for testing oleomargarine butter. I have also had frequently to examine fats with regard to their properties as solvents, lubricants, and with regard to their illuminating properties. I am now engaged upon a research of a technical character with regard to the identity of the well-known lubricant, "Frazer's axle grease."

Q. 3. Do you understand the German and French language so that you can read and translate the same?

A. Prior to my residence abroad I gave particular attention to
394 the study of modern languages, which I continued in Europe, acquiring the ability to read scientific works in at least twelve modern languages and speaking about half that number, and among those are German and French.

Q. 4. Have you read, so that you understand thoroughly the same, the defendants' exhibits introduced in evidence in this case, namely, the French, Bavarian, Austrian, and English letters patent to Hippolyte Mége and the translation exhibits of such foreign patents?

A. I have read the same carefully and think I understand them. I have particularly examined the original Austrian and Bavarian and compared them with the translations.

Q. 5. Have you read also carefully, so that you thoroughly understand the same, the Mége letters patent sued upon in this case, and

also the stipulation representing the defendants' process now in this case?

A. I have carefully read them both and believe that I understand them.

Q. 6. Please state whether or not you find the invention described and claimed in the Mége patent sued upon in this action suggested or described in either one of the foreign patents exhibits to Hippolyte Mége in this case, namely, the Mége French, English, Austrian, and Bavarian patents, and if you shall state that you do not find the invention or processes of the Mége patent sued upon in either of said Mége foreign patents, please then point out wherein the processes described in said foreign patents differ from the processes described in the patent in suit, and also any differences in the resulting products therefrom, and state in this connection the practical importance of such differences as to process or products?

(Objected to as leading, and also because the witness has read the manuscript of direct examination of Professor Morton and his statements covering the entire ground embraced within the question, and because defendants are estopped by the affidavit of Mége from denying that the American patent is for a different invention from the foreign patents.)

A. As the result of my careful examination of the exhibits referred to in your question, I reply that in my judgment the same, namely, the Mége French, English, Austrian, and Bavarian
395 patents, do not contain or suggest the invention which is described in the letters patent sued upon in this case. My reasons are based upon a number of considerations. Referring, in the first instance, to the second paragraph of the American patent, in which "crushing" is spoken of as the first mechanical operation, the patent states, "A complete crushing is necessary in order to obtain rapid work without alteration. For this purpose, when the substance is coarsely crushed, he let it fall from the cylinders under millstones, which completely bruised all the cells." Thus evidently contemplating as fully as possible the complete comminution and entire disintegration of the tissue enclosing the fat globules. In the corresponding paragraph of the French, English, Austrian, and Bavarian patents I find that what is contemplated at this stage is only a very partial and incomplete disintegration and subdivision; but, on the other hand, as the paragraph is entitled "a complete washing," this is exhibited by the language employed in the English patent, which is substantially that of the other foreign patents in the corresponding paragraph (when I allude to foreign patents hereafter in this testimony let it be understood that I mean the English, French, Austrian, and Bavarian). The English patent reads in this paragraph: "This is obtained by reducing or crushing the fresh suet under a shower of fresh water which falls between two rollers at the same time as the fat, which, divided by the water and the pressure, falls into a vessel, in which the washing is completed by a stream of water."

It is evident, on simple inspection of the terms employed, that

whereas a complete, thorough washing could and probably would result from this operation that a thorough and complete crushing or minute subdivision could not possibly be obtained. Not only is this view warranted by an inspection of the language describing this stage of the process, but I have found upon actual experiments, made both in Chicago and at Boston, with the precise mechanical arrangements as prescribed in this part of the process, that only a loose, very coarse, and incomplete breaking up of fat masses is hereby accomplished, ample, it is true, for the satisfactory and complete washing of the fat, but for nothing approaching in the least the "complete crushing" which is necessary, according to the American patent.

396 Passing now to the consideration of the next step in the process, that spoken of under the head of "digestion," I find the foreign patents differ quite as materially. In the directions given for preparing the artificial gastric juice in the foreign patents an amount of this juice is prepared sufficient in quantity to immerse the fat, which amount, as I have found upon repeated experiments, would be from thirty to forty per cent. in weight of the fat employed, and even in the one alternative method permitted in this paragraph, as directed by the Bavarian patent, the amount of the artificial gastric juice is specifically stated as being 300 kilos to 1,000 kilos of the fat, or thirty per cent. On the contrary, the American patent, under which this suit is brought, directs the employment of artificial gastric juice in the proportion of "two liters per hundred kilos of greasy substance." The small amount here used clearly indicates that the artificial gastric juice was not material or much relied upon, while, on the other hand, as we have seen, the amount taken of this gastric juice indicates its very prominent function in this stage of the process. If the amount prescribed by the foreign patents was necessary to perform the solvent action necessary under those patents the small amount employed in the American process would have been totally inadequate to perform a similar or corresponding important service.

A further difference in the American patent, in connection with the operation designated as digestion, I fail to find or its equivalent in either of the foreign patents. I refer to the sentence in the American patent, paragraph three, where he states: "He slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate it."

Directions of this sort or anything approaching thereto I emphatically regard as entirely wanting in the foreign patents. This increase of temperature to about 103° Fahrenheit, so that, or, to employ my own language, expressing, I think, the idea of the inventor, is in order that "the matter shall completely separate. The corresponding descriptions in foreign patents contemplate and describe

397 such a procedure as shall allow the fat to remain in contact with the artificial gastric juice at the temperature of animal heat until all the dissolved fat appears limpid on the surface." In the American patent such a separation of the fat was by the inventor regarded as incomplete and unsatisfactory for this pur-

pose, and hence he directs the application of a sufficient heat, about or in the vicinity of 103° Fahrenheit, but yet adequate, as he specifically states, "so that the matter shall completely separate."

To review, then, and concisely express the characteristics of the two processes, the one contemplated by the foreign patents and the other contemplated by the American patent, we may regard that the former depended upon a thorough washing of the crude fat in connection with a coarsely and imperfect crushing, this to be followed by a digestive operation under the influence of a large amount (thirty to forty per cent.) and at a temperature, as the uniform language of the foreign patents expresses it, "of the animal body." This, from my experience, which during the last four years has been very extensive in experiments relative to artificial digestion, should, under no circumstances, exceed the temperature of 103° Fahrenheit. The usual limits regarded as the most favorable for artificial digestion are 96° to 98° Fahrenheit as a minimum and 103° Fahrenheit as the extreme maximum. Another division of the process involved in the question brings to light a still farther and most radical point of difference between the American patent and the foreign patents. This is the operation by which it is intended to effect a separation of the stearine from the margarine (I use this word margarine as it is still retained in technical literature, although chemical science at the present date has discarded it, margarine as formerly considered now having been shown by later investigations to be a mixture) and oleine. In all the foreign patents I find that the cooled product is, as a mass, cut into pieces or slices about an inch thick, as specified in some of the foreign patents, or half an inch thick, as specified in the English patent; then put "into a cloth between hot plates of a press." It is then submitted to pressure and yields the oil contemplated as the final product by the foreign patents, intended as a substantial equivalent as edible fat
398 to be used in the place of butter. In the American patent the process at this stage is quite different. The product is not allowed to become rigid, so as to admit of cutting it into thin slices, but is retained at a temperature fixed and carefully guarded ranging from 86° Fahrenheit for the soft fats to 98° Fahrenheit for hard fats. Thus retained at this uniform temperature for "a certain time, more or less long, according to the fats, the stearine is deposited in the form of teats at the middle of the oleomargic liquid."

This retention in the American patent of the product at a temperature so well and carefully regulated would, as is well known by scientific men, permit of the semi-crystallizing out of the stearine from the mixture of stearine, margarine, and oleine, of which the mass is composed, and in this semi-crystalline or granular stearine margarine and oleine would be sucked up or absorbed mechanically or by capillary action, such as a sponge absorbs and retains water. Such a product thus carefully and cautiously prepared under the conditions as to temperature, favoring a spontaneous separation out from the mixture of the stearine alone, would be a most favorable ore for yielding without recourse to hot plates the product, relatively

poor in stearine, and hence perfectly edible and wholesome, entirely suited for the purposes contemplated by this invention. Where, however, as distinctly described, the cooled, now solid, mixture of stearine, margarine, and oleine is to be exposed to the action of hot plates a product would be obtained under the circumstances of the case necessarily too rich in stearine to be adapted to the uses contemplated by the invention in the American patent. This latter product would be a substance having a pure, agreeable, bland taste, with entire freedom from the granular adhesive sensation upon the tongue and palate which characterizes the product made under the foreign patent and with the employment of hot plates.

The rationale of this deduction is upon scientific grounds very simple. The sliced mixed fats enclosed in the cloth and in contact with hot plates receives and transmits to its interior, but very sluggishly indeed, the heat radiating from and transmitted by the aforesaid plates.

399 It is well known to chemists that fats, especially solid fats, are exceeding poor conductors of heat, and long before the olemargarine within the interior of the solid cakes had become sufficiently fluid to escape through the cloth a large portion of the exterior part would be thoroughly melted, thus yielding to the oil dripping from the press its entire amount of stearine. Such an oil would not have the properties of that prepared according to the American process, not only as to flavor, but also as to grain or structure, and, farther, would solidify at a temperature several degrees higher than the oil furnished by the American patent.

(Counsel for defendant suggests that it would have been an economy of time if the notary had simply copied Professor Morton's answer to the similar question in his deposition, the difference between the two answers being merely "formal" and not "substantial.")

Q. 7. Did you see the last witness upon the stand, Mr. Pendleton, the night watchman?

A. I did see him.

Q. 8. Will you please state whether or not this night watchman was present and witnessed yourself, Professors Morton and Chittenden slicing up with a knife certain cooled fats which you were manipulating in following the process under the Mége foreign patents at the factory of his employer last week?

(Objected to as leading and immaterial.)

A. He witnessed the operation most emphatically, as he himself performed it under our direct and immediate supervision, doing so precisely in the manner indicated in your question.

Q. 9. Is the product produced by the patent sued upon identical with natural butter; and, if not, what renders it a new and improved material either by the omission or addition of substances not found in natural butter?

A. It contains essentially the same constituents, and those not present in this are in butter present to a slight extent.

Q. 10. If it should be practically a fact that this oleomargarine product made under the Mége American patent keeps much better and has much better preservative qualities, what would you say to its being a new and improved material in this respect and the reasons for it?

400 (Objected to as hypothetical and incompetent.)

A. It is precisely these substances which are present in butter, only to the extent of a very few per cent., which for the most part are known to chemists as compound ethers that give to that substance its inherent proneness to change in a sense of deteriorating, and it is also precisely the absence of these substances in the product obtained under the American Mége patent that causes this latter product to have what is generally recognized as a better keeping quality?

Q. 11. Were you present at Chicago and personally heard defendant's expert witness, Professor Barker, give his deposition in this case?

A. I was present during his entire testimony.

Q. 12. Do you agree with Professor Barker that there is anything in the slight amount of artificial gastric juice used in the Mége American patent sued upon which gives to the product of that patent the taste of molten butter, or that artificial gastric juice can, under any circumstances, give any such taste of fat?

A. If the development of any such taste or flavor by the action of artificial gastric juice is possible Professor Barker has been the first one to observe it, and it is certainly an original discovery unknown to other chemists who, unlike him, have not as yet abandoned chemical research for the domain of physics.

Q. 13. Has artificial gastric juice as applied to fats any other purpose or scope except to liberate or assist to liberate the fat globules from their surrounding tissues?

(Objected to because grossly leading.)

A. I can conceive of no other object, but would regard the employment of a greater amount than necessary for this purpose as detrimental to process and product.

Q. 14. In your opinion is the process of the first five sections of the Mége American patent in any respect a physiological process?

A. In no respect whatever, as I understand the meaning of the term physiological.

Q. 15. Have you ever carried out and followed literally the process of the Mége patent sued upon to the extent of employing the slight gastric juice composition down through the first five sections of such patent?

401 A. I have done so.

Q. 16. Have you also followed and carried out literally and exactly the defendant's process as represented by the stipulation filed in this case with the addition or explanation thereto that the fat as it came from the hasher was reduced to a pulp or with all the cells completely bruised?

A. I have also done this.

Q. 17. Please state whether or not, in your opinion, there is any recognizable or substantial difference between the process of the American patent sued upon and the process of the defendant identified by this stipulation or any recognizable or substantial difference between the product of the process of the first five steps of the American patent sued upon and the product of the defendant's process as represented by the stipulation in this record.

(Objected to as incompetent in rebuttal, especially as precisely the same subject was inquired into and answered by complainants' expert at length in the complainants' *prima facie* case.)

A. I do not regard that there is any difference.

Q. 18. Did you ever visit the factory (at Chicago) of the defendants with their knowledge and consent?

A. I did so visit it, on the twenty-first day of August last, in accordance with a previous arrangement for that purpose.

Q. 19. Did you then and there personally witness the manufacture of the oleomargarine products by these defendants so far as the first five steps of the Mége patent sued upon are concerned?

A. I did then and there carefully and thoroughly examine and witness the process carried on in accordance with these five steps.

Adjourned to September 10th, at 10 a. m.

Met pursuant to adjournment.

Present: Same as before.

Examination of Professor WHEELER resumed:

Q. 19½. The stipulation as to the defendants' process in evidence in this case expresses the process fully except as to some slight
402 details. I will not ask you to repeat the process you saw at the defendants' factory, but simply one or two points by way of supplement or explanation not inconsistent with the stipulation on file, and to this end I now ask you to explain somewhat minutely the exact method employed by the defendants in taking the oil or stock or product from the seeders and shaping it for the presses for the extraction of the stearine and the condition of the product at that time.

(Objected to as incompetent in rebuttal and because both defendants and complainants are bound by the stipulation.)

A. While I made a very thorough and minute examination from beginning to end of the process employed by the defendant at his factory at Chicago, I gave especial attention to this stage of the work. The workman employed in this part of the operation was seated before a strong revolving table and adjacent to him had the supply of stock. Near the margin of this revolving table, at short intervals, there were fastened wooden cleats in such a manner as to form a parallelogram whose dimensions were, measured upon the inside, eleven inches in length, seven inches in breadth, and one and three-fourths inches in height; taken in connection with the

thereby enclosed area of the table, it resembled much the cover of an ordinary box. Upon this frame was laid a large piece of canvas, perhaps four to six times the area of the frame, and upon this was placed the stock by the workman above referred to. The manner in which he did this was by placing his two hands together, palms towards him and with his fingers loosely interlocked, then with his two hands he scooped up from the supply of stock a quantity which appeared sufficient when laid upon the cloth aforesaid to fill the frame above described about to its upper surface. In order that it might fully do this, with his hand he pressed and smoothed the soft mass so that it would fill out the ends and corners of the frame and thus take the shape of this case or mould that served as the retaining vessel for the purpose. The table was then revolved a certain distance to the next workman, who folded the cloth loosely over the enclosed mass of stock, and by another workman the cloth, with its contents, was conveyed to the
403 press. I did observe at the factory scoops similar to ordinary sugar scoops, apparently very convenient for manipulating a soft, semi-solid mass of the character presented by the stock, and judge that these were sometimes employed for scooping up or manipulating the latter.

Q. 20. Was this operation of removing the product from the seeders and pressing it at the defendant's factory carried on in the same room or temperature?

(Same objection.)

A. The operation of removing the stock from the seeder and pressing it were both performed in the same room and under the same conditions of temperature.

Q. 21. Were the plates of defendant's presses which squeezed out the oil hot or any warmer than the temperature of the room in which they stood?

(Same objection.)

A. The plates of the presses were not hot, but had precisely the temperature of the seeding-room in which they were situated.

Q. 22. Did you handle, taste, and smell the oil or product at the defendant's factory when it was drawn on from the melting kettles?

(Same objection, and also because the complainants are bound by the testimony of their witnesses in their direct case, to wit, the testimony of Horace Manley and others, that it was tasteless and odorless and did not have the butter taste, and complainants cannot now contradict or controvert their own testimony on this point.)

A. I did.

Q. 23. Will you please state whether or not there was the slightest difference in taste, smell, or composition between the product or oil of the defendants when it was drawn off from the melting kettle and the product or oil produced by the process described in the patent sued upon as found by you in working such patent at the

same point in said patent where the oil is melted and separated from the tissues in said patent?

(Same objection.)

A. In all respects the oil referred to in the question was precisely the same as to taste, odor, and general physical appearance.

404 Q. I see that in the patent sued upon the oil or product at the point last described must not have any taste of fat, but, on the contrary, must have the taste of molten butter. Please state whether or not, in your opinion, the patent accurately identifies and describes the product as it exists in the processes of complainants and defendant at the point indicated in the few preceding questions.

(Objected to as leading, and also because the complainant *is* bound by the statement of their expert, Professor Morton, in his direct examination just taken, that such product does not possess any butter flavor.)

A. If there was any difference between the oil at this stage, as to its taste and flavor, and that of molten butter I could not discern it. There might have been a little more adhesiveness of the product to the palate or tongue than is present in molten butter, but as to flavor or odor, properly speaking, I could detect no marked difference.

(Same objection to the answer, and also because complainants are bound by and cannot contradict the testimony of their own witnesses on this point in their *prima facie* case, and notice is hereby given that at the hearing motion will be made to strike out the above question and answer.)

Q. 25. Will you please state whether or not the opinions and statements you have made in this deposition are founded upon thorough, careful, and practical experiments made by you under and in accordance with the precise processes of the Mége French, English, Bavarian, Austrian, and American patents sued upon, as well as the defendant's process, aside from and in addition to your knowledge and study as a chemist and scientist.

(Objected to as leading.)

A. They are founded both upon my study and experience as a practical chemist, and also upon certain experiments conducted by me on a manufacturing scale to thoroughly test these patents.

405 These experiments I have conducted during a period of five days in Chicago and repeated and extended them during a period of six days at Boston.

Q. 26. Without requiring you to describe, itemize, and *in* detail the experiments and results carried on by you under these patents to substantiate your conclusions and opinions, I will, however, call your attention specifically to that step in the several processes of the Mége Bavarian, Austrian, French, and English patents which refers to the cooling of the mass until it can be turned out or dumped upon a table and then cut or sliced into pieces one-half an inch or an inch thick, and these pieces after being encased in cloths to have

the stearine and oils separated therefrom by means of hot plates under pressure. Will you please state somewhat in detail your experiment in working this part of the process of the foreign patents and your results therefrom, and in this connection whether or not, in your opinion, a practical and edible product can be produced in this manner.

A. Without going into unnecessary detail, I will state that I carried on this part of the process, and in the manner alluded to in your question, on two portions of stock. In one instance the plates had a temperature of about one hundred degrees Fahrenheit; in the second instance they had a temperature of about five or ten degrees higher. In the first instance the stock yielded an oil amounting to eighty and five-tenths per cent., and there remained in the cloths nineteen and five-tenths per cent. of stearine. In the second experiment, where the temperature was about 105° or 110° F., the amount of stearine remaining in the cloth was five and three-tenths per cent., and the oil obtained ninety-four and seven-tenths. The oil obtained in both of these cases differed in appearance and also in taste from that obtained in following the process of the American patent. It was much more thick and viscid, very sticky on the tongue and roof of the mouth, and felt granular or semi-crystalline. In addition to this, it solidified at a much higher temperature than did the oil obtained under the American patent. Kept in the same room, under the same condition of temperature as that obtained by the American process, it early solidified, while the latter still remained the fluid.

406 Further, in the second of the abve-mentioned experiments I took care to note the temperature at which the oil became solid, in comparison with another lot of oil obtained under the process of the American patent. The latter was still fluid at 91° F., while the former had already become solid at 95° F. This, of course, is due to the large excess of stearine in the product obtained by the use of hot plates. A notable circumstance in this connection was the fact that when operating with hot plates the entire mass of plates and structure of the press below the point where the bags of stock were located were smeared over with stalactitic-like masses of solid stearine much resembling the irregular masses adhering to the sides of a badly burning tallow dip. In all my experience in connection with the pressing of oleomargarine stock I have never witnessed similar deposits; the oil usually leaves the plates and press clean or, at least, free from any soiled deposit. I should regard the oil obtained by the use of hot plates as not an edible product, but wholly unsuited as a wholesome article of human food.

Q. 27. I see in the translation exhibits of the Mége Austrian and Bavarian patents, under the head of "perfect washing" in the Austrian patent, and under the head of "washing and crushing" in the Bavarian patent, there appear the words "finely subdivided" and "subdivided finely," when referring to the condition of the fat while being washed. I ask you if this is a correct translation, and whether in the original these words occur, or whether in the original there is any justification for using the word "finely" in this connection.

A. I find on examining the original of both the Austrian and Bavarian exhibits that there is no word or expression in the paragraph to which the question refers which either remotely or explicitly conveys the idea expressed by the English word "finely." In the Bavarian the expression is "*estheiltsich*," which is — equivalent for the English expression "it is subdivided." In the Austrian patent the expression is "*zertheilt*," the nearest equivalent in English for which is "coarsely crushed," there being involved in the German in this connection the further idea of coarsely crush-
407 ing under pressure. If the Germans wish to imply the idea of "finely" they have in their word "*fein*" the precise equivalent for the English expression.

(It is understood between the counsel that the direct examination of the witness is closed, and that he will be produced for cross-examination, in Chicago, upon written request of counsel for defendant, upon his return to Chicago.)

(Certified.)

ASA F. SMITH,
Notary Public, Kings Co.

Cert. filed in N. Y. Co.

SEPTEMBER 15.

Met pursuant to adjournment.
Counsel present as before.

(Counsel for defendant consents that the cross-examination of Professor Morton may be interrupted to take the direct examination of Professor Chittenden, but he reserves the right to cross-examine the latter after the cross-examination of Professor Morton is concluded.)

And thereupon complainants call RUSSELL H. CHITTENDEN, who, being duly sworn, testifies as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Russell H. Chittenden; age, twenty-eight; residence, New Haven, Connecticut; occupation, professor of physiological chemistry in Yale College and member of the governing board of the Sheffield scientific school.

Q. How long have you been professor of physiological chemistry in Yale College, and is there now any other professorship of physiological chemistry except that held by yourself?

A. I have charge of the laboratory of physiological chemistry, as instructor, since 1875, and professor in charge since 1882. There is no other professorship in Yale College other than the one I now hold.

408 Q. 3. Please state, somewhat itemized and in detail, what knowledge and experience you have had, both practical and theoretical, which qualifies you to express an opinion concerning animal fats or their treatment as an article of human food, and generally what knowledge you have of the same derived from your study and experience relating thereto; and you may state somewhat

briefly in this connection what experience you have had in giving opinions or as a sworn witness in trial cases coming under your peculiar domain of science as represented by your qualifications and professorship.

A. As a teacher of physiological chemistry in Yale College for nearly ten years it has been my duty to give instructions in those branches of physiology and chemistry which have a special bearing on the composition of animal substances and the changes which the various organic food-stuffs undergo in supplying the needs of the body. In this connection the study of the composition of the various fats, their use as foods, and the changes which they undergo in the animal organism have constituted an important part of my special duty. A portion of 1878 and 1879, a little more than a year in extent, I spent in special study in the laboratory of the Physiological Institute of the university at Heidelberg, investigating certain questions in the domain of physiological chemistry. During these ten years I have published a large number of original investigations in physiological chemistry in the American Journal of Science and Arts and the American Chemical Journal in this country, in the Chemical News and in the Journal of Physiology in England, in Leiberg Annal and Der Chemie und Pharmacie, in the Zeitschruft Fier Bivloque in Munich, in the Interschmager ans der Physioloeischen Institute der Universitate, Heidelberg. In 1882, at the request of Professor Kühne, professor of physiology in the university, Heidelberg, went abroad a second time to commence with him a series of investigations on the chemical process of gastric and pancreatic digestion with special reference to the products formed. Such papers as we have already published on the subject have appeared in the American Chemical Journal in this country, and in the Zeitshrift fur Beololgie in Munich.

One of the papers was recently read before a meeting of the
409 National Academy of Sciences, held at New Haven. During this past year I have been especially occupied with the study of the constitution and synthetical preparation of certain fatty bodies called the palmitions, which investigation is now in print. In 1880 I received from Yale College the degree of doctor of philosophy. During the past five years I have been repeatedly called as an expert by the State of Connecticut in quite a number of medical-legal cases, in which I have given testimony especially with reference to the action of toxical agents on the human system, notably in the "Jennie Cramer" case of New Haven and the "Mrs. Riddle" case of Norwich. In this connection I have also made chemical examination of human bodies, suspected cases of poisoning, in Hartford, in Cheshire, in Canaan, and in Saugatuc.

Q. 4. Do you understand the German and French languages so that you can read and translate the same?

A. As a great part of the literature of physiological chemistry is to be found only in the German and French languages, particularly the former, and as my library is composed mainly of German scientific books, it has become a necessity for me to read these two languages. While I do not consider myself an expert in the German and French languages, I consider myself sufficiently familiar with them

to correctly translate them, especially when the language employed pertains to scientific subjects.

Q. 5. Have you read and carefully studied and examined, so that you understand the same, the letters patent sued upon in this case, to the Commercial Manufacturing Company, Consolidated, assignee of Hippolyte Mége, patentee; also Defendant's Exhibit Mége English Letters Patent and the three several foreign patents to Hippolyte Mége introduced as exhibits by defendants and more particularly referred to and identified as the Mége French, Bavarian, and Austrian patents and Defendants' Exhibits Translations thereof?

A. I have read, studied, and considered the same as specified in your question and think I understand them.

Q. 6. Have you also read carefully, so that you understand the same, the stipulation filed in this case, setting forth the process used by the defendant in his treatment of animal fat?

410 A. I have.

Q. 7. Have you read also the deposition given in this case by Professor George F. Barker, of the University of Pennsylvania, relating to the above-mentioned exhibit patents, the defendant's process and the construction to be given to those exhibits, and the resulting effect produced thereby?

A. I have read it.

Q. 8. Professor Barker in his deposition, in his opinion, designates and pronounces one of the first five sections or steps of the patent sued upon to be essentially a physiological process. Will you please state whether or not, in your opinion, any one of the first five sections or steps in the Mége American patent sued upon is, essentially or otherwise, a physiological process or belongs in any manner to the domain of physiological science? And give your reasons carefully for any opinion you may express.

A. In my opinion the process of Mége for treating animal fats in order to obtain oleomargarine oil, as specified in the first five sections of the American patent, reissue No. 10137, can in no sense of the word be termed a physiological process; neither is it, to my mind, essentially a digestive process. It certainly cannot be considered by any unbiased person familiar with the individual steps of the process—who has witnessed the manufacture of the product on a commercial scale and examined the results of each step—that the third section of the American patent, namely, that of "concentrated digestion," is the main feature of the process, or that the other steps are nearly collateral. While Mége, in the first part of his specification, states that his invention is the result of physiological investigations, it does not necessarily follow that the process specified in his patent is a physiological process. If we analyze the first five sections of the American patent, we find that in obtaining the oleomargarine oil the third section above suggests anything akin to a physiological process. It is a point, however, well understood among students of physiological chemistry that a physiological process is a process incidental to and characteristic of a living organism under normal conditions. A physiological process is, to my mind,

411 inseparably connected with life, and without life the process

is no longer physiological. Webster in his dictionary defines physiological "as pertaining to physiology, relating to the science of the properties and functions of living beings." Worcester in his dictionary defines physiology as "the science of life or the phenomena of living bodies," while the Imperial Dictionary, the standard authority of Great Britain, defines physiological "as pertaining to physiology," and the latter as "that science which has for its aim the study and elucidation of the action and process incidental to and characteristic of the living state, whether in plants or animals." It is difficult, therefore, to see how, in the light of these definitions, a digestion carried on in an iron kettle and with a digestive mixture prepared from the dead stomach of a pig or sheep can be termed a physiological process. Further, it is to be noticed that the gastric juice called for in the American patent is prepared not by the aid of a dilute hydrochloric acid solution, as is customary when it is desired to prepare an artificial gastric juice as similar to the one occurring in the body as possible, but, instead, with the aid of biphosphate of lime, making thereby a mixture which, while possessed of peptonizing power and without doubt better adapted to the purpose Mége had in view, still does not accord as closely in composition with the natural digestive mixture as when prepared with the above-mentioned acid. In addition, the digestive mixture specified in the American patent does not, so far as I know, accord in composition with any digestive mixture occurring in nature. If any further data be required to strengthen my opinion that the process in question is not a physiological one, but a purely chemical one, we have the statements of Professor Maly in Herman's Hand Book der Physiologie (a book of the highest standing, published in Germany in 1883), 5th volume, page 37, to the effect, as I translate it, "Gastric digestion is a purely chemical process, which can succeed also outside of the organism in a vessel of quite a different character, and even more completely than in the living stomach on account of the lack of time in the latter case, there being in the case of human beings and carnivorous animals no noticeable mechanical act of digestion—
412 that is, no noticeable work of trituration. Further, A. Meyer, a well-known investigator on the subject of fermentation, as quoted by Dr. Ewald, lecturer in the Royal University of Berlin, on page 8 of his lectures on digestion, says "that a number of chemical processes, not explicable according to the rule of affinities, owe their occurrence to the presence of certain matter which is not recognizably concerned in the reaction, and the quality of which stands in inordinately small relation to the magnitude of the chemical processes caused by it," meaning thereby processes of fermentation, such as occur in the stomach intestinal canal. Again, Dr. Ewald himself, in his small book above cited, says (page 8): "We may consider it a fact not quite universal, but yet certain, so far as all fermentations in animal bodies are concerned, that fermentations in the presence of water and the ordinary body temperature gives rise to extensive chemical processes with the smallest quantity of ferment." (The italics in both above quotations are my own.) I therefore reiterate it as my opinion that the

process involved in the third section of the American patent is a purely chemical process, in which the ferment, pepsin, in the presence of the acid mixture resulting from the biphosphate of lime, acts upon the albuminous matter of the connective tissue and of the membranous covering of the fat cells, converting it in part, at least, into soluble bodies, thereby assisting in the liberation of the fat, and I hold that the above quotations support me in the view that the above process is purely chemical and not physiological in its character.

(Recess.)

Q. 9. Referring you again particularly to the Hippolyte Mége patent sued upon in this case (reissue No. 10137) and to the several defendants' exhibits, namely, Mége French, English, Austrian, and Bavarian patents, and asking you to compare the same with the Mége American patent sued upon, if you have not already done so, as to the first five steps of said patent, and to state whether or not you find the invention and process of the Mége patent sued upon described or suggested in either one of the Defendants' Exhibits Mége Foreign Patents, and if you shall state that you do not find the
413 inventions or processes of the patent sued upon in either of said Mége foreign patents, please then point out wherein the process described in said Mége American patent differs from the process described in the said Mége foreign patents, and state in this connection the practical importance, if any, in such differences as to the first five steps of the American patent. If you have personally and practically conducted any experiments and worked out the processes of these several patents in aiding you in forming or demonstrating any opinion or conclusions at which you may have arrived, you can state such experiments to the extent you may desire in answering this question.

A. I do not find the process of the American patent contained in any of the foreign patents specified in your question. In fact I find very decided differences between the process of the American patent, on the one hand, and the processes of the foreign patents, on the other.

Such comparisons as I may draw between the Mége foreign patents and the American patent (reissue No. 10137) are based not only upon the wording of the patents and upon my general and special scientific knowledge, but also upon my personal observation of the results of each of the processes as carried out under my personal supervision at the factory of the Commercial Manufacturing Company, at Brighton, in conjunction with Professors Morton and Wheeler. By examination of the foreign patents (meaning Bavarian, Austrian, French, and English) I find that the first sections of the patents are substantially identical. This first section of the foreign patents, headed "complete washing," I find to be a simple description of a method for "thoroughly freeing the fat from all objectionable material prior to the second step, that of artificial digestion." The following quotation from the English patent, which says that "this is obtained by reducing or crushing the fresh

suet under a shower of fresh water which falls between two rollers at the same time the fat which, divided by the water and the pressure, falls into a vessel in which the washing is completed by a stream of water," plainly indicates to my mind that the only object to be accomplished by this first section is that of complete washing. The
414 necessities for this thorough washing are to my mind the following: First, in view of the long time which the fatty matter, according to the carrying out of the process, must be exposed at the temperature of the animal body to the action of a large quantity of artificial gastric juice, it is evidently necessary that all traces of blood or adhering muscle tissue should be removed as far as possible, since, as is well known, such substances are exceedingly prone to decay, especially at the body temperature, and thus give rise to deleterious and even offensive products which might materially affect the character of any fatty product obtained. For such complete washing it is self-evident that a crushing or dividing of some kind is absolutely necessary, but that anything other than a coarse crushing is intended is to my mind wholly improbable. That this reducing or crushing of the fat called for in the foreign patents was intended to be of a totally different kind from that specified in the American patent, which calls for a complete crushing with complete bruising of all the cells, is evident to my mind from the statement in the latter portion of the first section of the foreign patents, in which it is stated that the subdivided fat "falls thence into a tank where a current of cold water completes the washing." Now, it is a fact well understood by persons familiar with the behavior of finely divided fat, such as would be obtained in the carrying out of the section of the American patent, where the fat cells are completely bruised, that when mixed with water, especially with water in motion, finely divided fat is known to form an emulsion with the water, which would interfere very materially with its further separation. In view of this fact it appears to me wholly improbable that the inventor in the first section of the foreign patents intended to specify anything other than such a coarse crushing as would be deemed suitable for the complete washing of the fat. It appears to me, moreover, that in the second section of the American patent we have evidence of an improvement in the method of crushing the fat, designed not to aid the washing of the fatty material, but rather to favor liberation of the fat globules from the surrounding membrane.

In other words, in view of the rapid working which seems to
415 be characteristic of the American patent, there no longer exists the necessity for such a thorough and complete washing as was necessary in the foreign patents, and therefore, to my mind, the complete crushing with complete bruising of all the cells can have no other significance than a mechanical liberation of the fatty matter from the connective tissue and from the cell wall by which it is naturally surrounded.

In other words, there is to my mind, so far as the separation of the fatty matter is concerned, a substantial equivalency between the complete crushing of the American patent and the coarse crushing

coupled with the action of the digestive mixture in the foreign patents.

Referring now to the second section of the foreign patents, namely, that of artificial digestion, and comparing it with the third section of the American patent, I find at once very decided differences, both in the nature of the processes specified and in the character of the products obtained. In only one of the foreign patents, namely, the Bavarian, do I find any definite statement of the proportion of artificial gastric juice to be employed. In this one instance I find the following exact statement as an alternative: "Or to one thousand kilos of fat, 300 kilos of water, one kilo bicarbonate of soda, and two stomachs." This mixture, while an utterly preposterous one so far as any digestive action is concerned, owing to the fact that the active ferment contained in the stomachs is wholly inactive and even destroyed in the alkaline fluid, still gives us a definite statement of the percentage amount of water to be employed in proportion to the fatty tissue; or, in other words, that the inventor considered at least thirty per cent. of fluid to be necessary for the proper carrying out of this digestion.

If, however, the process of artificial digestion be carried out as specified in every other instance in the foreign patents, namely, adding sufficient gastric juice (made from the stomach of a pig or sheep in acidulated water) "to the fat to the extent of immersing it completely," it will be necessary to employ, as I have found by direct experiment in two instances, sixty-four to sixty-seven per cent. of such fluid.

Following the description of the foreign patents still further, I find it specified that the mixture of fatty matter and artificial gastric juice is to be "kept at the temperature of the animal body until the fat appears in a clear layer on the surface." Comparing now the first portion of the third section in the American patent, I find, in which it specified, that two liters of the artificial digestive mixture are necessary for one hundred kilogrammes of fatty matter; or, in other words, two per cent. of the digestive mixture. This proportion of digestive mixture, compared with the foregoing statements concerning the foreign patents, indicate to my mind very plainly at least two decided differences which appear to me to constitute a very decided improvement in the American patent. In the first place, it is a point well understood in physiological chemistry that the action of water or weakly acid fluids at the temperature of the animal body tends to convert all aqueous matter of connective tissue into a body or bodies akin to glue or gelatine. Thus, in following out the specifications of the foreign patents, where the fatty matter, with its admixture of fibrous tissue, is exposed to the action of such a large quantity (from thirty to sixty-seven per cent.) of fluid at about 100° Fahrenheit, I should expect to have developed and retained by the fatty matter deleterious products, thus rendering the latter exceedingly objectionable for any delicate use. Moreover, from my general knowledge of the fatty bodies, I should hardly expect to find the fatty matter, liberated from its surrounding tissue by the action of the artificial gastric juice, to

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take on the appearance called for in the foreign patents, when heated only at the temperature of the animal body, which, as is explicitly stated by the foreign patents, is the temperature to be employed.

My opinion on both of these two points has been fully substantiated by the results of the experiments carried out at the manufactory in Brighton in attempting to follow the description of the foreign patents.

Thus in the two experiments with one hundred and ten pounds of coarsely divided fat, in each case mixed with sixty-four and sixty-seven per cent. of an artificial gastric juice, respectively, the mixtures were heated continuously at the temperature of the animal body, in one instance for eighteen hours and in the other from twelve to thirteen hours, without obtaining in either case any evi-
417 dence whatever of a clear or limpid oil appearing as a clear layer on the surface.

The gastric juice employed was of standard strength, containing nearly two-tenths per cent. of hydrochloric acid and prepared from the mucous membrane of a pig's stomach. That the juice in question was exceedingly active and well adapted to the purpose I proved by testing the digestive action of the fluid on a quantity of well-washed blood fibrine. Consequently the failure to obtain a clear and limpid fat, as called for in the foreign patents, could not be due to the lack of suitable artificial gastric juice. In fact the appearance of the fatty matter in these two experiments showed plainly that the gastric juice had effected the purpose for which it was probably intended; the connective tissue appeared wholly removed; the membranous covering of the fat cells appeared wholly dissolved; the fat itself floated on the top of the mixture as a thick pasty mass, in what I should consider a semi-molten condition, but without any approach whatever to the appearance of a clear, limpid layer.

Furthermore, at the end of this time the fatty mass had no taste or odor resembling that of molten butter. On the contrary, there was distinctly perceptible a semi-glue-like, meat-like odor and taste, such as I should expect might be formed from the long-continued heating at the temperature of the animal body with such a quantity of fluid.

The only action which I can conceive the gastric juice to have, as employed in the foreign patents, is simply to aid the liberation of the fat which was scarcely, if at all, effected by the coarse crushing, inasmuch as it is a point well understood by physiological chemists that the gastric juice itself has no specific action whatever on the contents of the fatty globules. In this sense, then, I cannot but consider that the digestion with artificial gastric juice called for in the foreign patents has for its sole aim the simple liberation of the contents of the fat globules, and, since this can be accomplished in the coarsely crushed fat only by the aid of an active gastric juice in large quantity and by long-continued action, therefore any mechanical process which could accomplish the same purpose
418 without the admixture of fluids liable to produce any deleterious results would constitute an important improvement, and would at the same time, so far as the final result is concerned,

be a substantial equivalent; and this, to my mind, constitutes one of the important improvements of the American patent, in which the action of the artificial digestive mixture is reduced to a minimum and occupies an exceedingly subordinate position, owing to the more complete mechanical liberation of the contents of the fatty globules.

That this is the case is evident when we compare the two per cent. of the digestive mixture employed in the American patent with the thirty to sixty-seven per cent. needed in carrying out the foreign patents, and likewise, remember, that in place of the active acidulated water called for in the foreign patents we have substituted in the American the much less active biphosphate of lime. In the latter half of the third section of the American patent I find what constitutes, in my opinion, one of the important improvements of the American patent, and which, taken in conjunction with the small amount of digestive mixture employed, namely, two per cent., admits of the successful obtaining of a clear and limpid fatty product, free from the deleterious matter which must necessarily be characteristic of the product obtained by following out the foreign patents.

Thus, in the third paragraph of the American patent referred to, after having described the melting of the fat by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, I find it stated "he slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate." According to my opinion, based on the wording of the patent and on my experience in carrying out the process, the inventor intended to convey the impression that having crushed the fat so as to completely bruise all the cells, thereby liberating to a great extent the contents of the fatty globules, and then having melted the fatty matter in the small quantities of weak digestive mixture at the temperature of the animal body, namely, at a temperature not to exceed 103° Fahrenheit, he then slowly raised the temperature until the fatty matter completely separated as a limpid layer, the whole process con-
419 sistent with the obtaining of the desired result to be carried out at a temperature as near as possible to 103° Fahrenheit.

An experiment carried out at the manufactory in Brighton with two hundred and forty pounds of fatty matter yielded as a result at 120° Fahrenheit a clear oily like layer without taste of tallow or crude fat, without the objectionable features noticed in the semi-molten fat obtained by the foreign patents—in fact, with all of the physical properties of molten butter.

Before leaving this discussion of this section of the American patent I find in the description itself still other evidence, in my opinion, that the complete crushing called for in the American patent was intended to supplement the action of the artificial gastric juice of the foreign patents. At the end of the third section of the American patent is the sentence, "The separation is well made, and the organized tissues which do deposit are not altered." To my mind there are two possible interpretations of this sentence. One is that Mége intended to convey the impression that the organized tissues so deposited are not putrid or decomposed, which examination

would appear to my mind wholly useless and uncalled for, especially in view of the fact that he has previously stated that by his improved method of complete crushing he obtains rapid work. The only explanation, therefore, that seems to my mind at all tenable is that by the improved American process the complete crushing has so far supplemented the use of the artificial gastric juice that but little, if any, peptonizing action takes place so far as the organized tissues are concerned, and therefore they settle out wholly unaltered at the end of the rendering. Such an opinion as this might seem to involve a selected action on the part of the weak digestive mixture. This, however, in my opinion, is but partly true. I consider that by the process of complete crushing a large number at least of the fatty globules are ruptured and the fatty matter liberated. Those, however, which are not, owing to the extreme thinness of their limiting membrane, are easily affected by the digestive mixture, and inasmuch as the fatty matter has been so thoroughly pulverized by the grinding action large masses of cells are not to be considered as existing. It appears to me, therefore, quite possible that the
420 thin-walled membrane surrounding the unbroken fat globules might be sufficiently dissolved to admit of the liberation of their contents without the more compact and fibrous connective tissue, which exists more in the shape of bundles and trabeculæ, being but little, if any, affected by the weak digestive mixture specified in the American patent.

Adjourned to September 16th, at 10 a. m.

SEPTEMBER 16, 1884.

Examination continued pursuant to adjournment.
Counsel present as before.

Answer of Professor R. H. CHITTENDEN continued:

Referring now to the third section of the foreign patents, namely, that of cooling in the Bavarian patent or of pressure in the English and Austrian patents, I find it specified that "the fluid fat (I quote the Bavarian) is poured into vessels which have an opening at the bottom and contain a layer of tepid water. They are covered, and when crystallization has occurred in consequence of cooling the water is drawn off through the opening, the vessel is inverted, and the cake is allowed to fall on a table." This I find to be the substantial method of operation in all of the foreign patents.

As I understand it, therefore, it is the aim of the foreign patents to obtain a complete solidification of such fatty products as may have been obtained in sections one and two. That entire solidification is intended is plainly evident from the statement that "the cake is allowed to fall on the table." This is still further evident from the fourth section of the Bavarian patent or the latter half of the third section of the other foreign patents, in which it is stated (I quote the Bavarian) that "the cooled fat is cut into slices about one inch thick." In the other foreign patents the statement is practically the same, except that the fat is "cut into pieces about half an inch thick."

421 Comparing now the fourth section of the American patent, called "crystallization in a mass," I find a very decided difference in the method of procedure, which to my mind would tend most decidedly to alter the character of the ultimate product.

Thus it is stated in the American patent, section 4: "He contrived for this purpose the following method, which produced a very perfect separation and is as follows: He rendered the molten fat in a vessel, which must be sufficient for containing it. This vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub he put water at a temperature of 86° F. for the soft fat proceeding from the slaughter-houses and 98° F. for the harder fats, such as mutton fat. Afterward the washtubs are covered, and after a certain time, more or less long, according to the fats, stearine is deposited in the form of teats at the middle of the oleomargaric liquid."

This, as I understand it, is a plain and definite statement to the effect that a crystallization of the stearine is intended at a temperature well defined, namely, 86° F. or thereabouts, while the oleomargarine remains as a liquid oil.

Contrasted, then, with the foreign patents the two processes are exceedingly unlike. The one, namely, the foreign, calls for a complete solidification of both the stearine and the oleomargarine, while the American patent distinctly specifies a crystallization of the stearine from the liquid (italics are mine) oleomargarine oil, and this I consider as a very essential improvement when taken in conjunction with the next step in the process. Continuing our comparison of the foreign and American patents, I find it further stated in section 3 of the English patent, referring to the pieces half an inch thick cut from the solid cake obtained in the solidification of the fatty product, "these pieces are wrapped in cloth and put in a press between hot plates." Further, in the Bavarian patent I find a similar statement as follows, referring to the slices of fat, "and put into a cloth between hot plates of a press." "The portion which runs off is a mixture of margarine and oleine, resembling lard in composition and of about the taste of fresh butter; it melts in the mouth
422 like butter and does not stick to the palate like beef fat. The solid residue taken from the cloth is good stearine." These two quotations, which plainly indicate the character of the process employed in the foreign patents for the separation of the oleomargarine oil from the stearine, are to my mind wholly inconsistent with the obtaining of a product free from that amount of stearine necessary to render it at all palatable or adapted to the delicate purposes for which oleomargarine is used.

This opinion I base in part upon my general knowledge, obtained by experimental work in the laboratory, of the behavior of the various fats when exposed to different degrees of heat.

It appears to me wholly impracticable to obtain an oleomargarine oil free from that amount of stearine necessary to remove the character of tallow by carrying out the process specified in the sections of the foreign patents "cooling" and "pressure," since in my opinion any attempt to express a liquid oil from a solid cake composed

of an intimate mixture of stearine and oleomargarine by pressure between hot plates would be followed by an unequal liquefaction; or, in other words, in my opinion the outside portions of the cake—that is, those most closely in contact with the heated plates—would be entirely melted, and thus any exact separation of stearine from the oleomargarine could hardly be effected.

One of two things would certainly follow, dependent upon the temperature employed, either a small yield of so-called oil would be obtained, representing that portion obtained by the melting of the outer portions of the cake, or else a large yield, as when a higher temperature is employed from a more complete melting of the cake. In both cases, however, the resulting product would, in my opinion, necessarily contain such an amount of stearine as would render it unpalatable as an article of food.

Theoretically it might perhaps be considered that the oleomargarine with its lower melting point might be pressed out, leaving the stearine behind as a solid mass; but in this connection it must be remembered that the oleomargarine and stearing, according to the specification of the foreign patents, are intimately mixed both in a solid condition, and thus any attempt to remove the more
423 easily melting oleomargarine must necessarily be followed by the melting of a certain amount of the stearine, more or less, according to the temperature, which cannot but render the oil unfit for the purpose for which it was intended. That this opinion is a consistent one is plainly indicated by the following experiments tried by myself in conjunction with Professors Morton and Wheeler. A quantity of recently rendered oil was allowed to stand in a so-called seeding can until the oil contained in it was in the condition of a solid cake, namely, the condition called for in the foreign patents.

The seeding can was then inverted and the mass allowed to fall into a large box. That it was in the condition called for by the foreign patents is evident from the fact that it preserved its form, appearing like a cheese or a cake of hard butter. I marked upon its upper surface with the aid of a rule division half an inch in width; with this as a guide slices half an inch or more thick were cut. These were wrapped up in cloths and placed in a press upon and between warmed plates.

The plates had been previously immersed in water having a temperature of 125° F. Before pressure could be applied, however, the radiation of the heat was such that the temperature of the plates could, in my opinion, hardly have reached a temperature of 90° F. In this experiment, however, even at this temperature in which the plates could hardly, according to the usual interpretation of the word, be termed warm, since it must be remembered that we form average estimate of temperature by the touch and that the body temperature is about 100° F.—in this experiment, I say, the character of the resulting oil was such as to plainly indicate, even at this temperature, the effect of the slightly warmed plates. The percentage of oil obtained was eighty-three and four-tenths per cent.; the percentage of stearine sixteen and six-tenths per cent., being from two

to three per cent. less stearine and more of oil than was obtained by another of our experiments with plates at the temperature of the room, which latter result agrees substantially with the general average of the results obtained at the Commercial Manufacturing establishment in Brighton, as was evidenced by
424 their book of averages shown me by the superintendent. The most striking evidence, however, of the effect of the warm plates was the character of the resulting oil, as mentioned above. That it contained a larger percentage of stearine than usual was evidenced by the fact that as the oil flowed out between the warm plates and fell upon the cooler ones it would impart, solidify, and to the palate gave evidence of the stearine. Another experiment similarly conducted gave a like result, namely, sixteen and eight-tenths per cent. stearine and eighty-three and two-tenths per cent. of oil. A third experiment, similar to the preceding in every respect except that the iron plates had been previously immersed in water heated to a temperature of 155° F., gave a still more striking illustration of the influence of temperature on the resulting product. In this instance, in which, in my opinion, the plates at the time of pressure must have had a temperature of from 100° F. to 110° F., there remained in the press at the end of the operation but five and twenty-six hundredths per cent. of the stearine, while ninety-four and seventy-four hundredths per cent. of the fatty matter had been removed. This product, which would represent, according to the specifications of the foreign patents, the oleomargarine oil, had to the palate a decidedly granular character and gave still other evidence of the presence of a large percentage of stearine by the fact that this so-called oil solidified at a temperature of ninety-five degrees, while oil previously made was still fluid at 91° F., the temperature of the room being 89° F.

These experiments plainly uphold me, to my mind, in the belief already expressed, that the combination of entire solidification followed by pressure between hot plates is an impracticable method for the obtaining of an oleomargarine oil suitable in any respect for delicate uses.

(In the second experiment above quoted I omitted to mention that the slices cut from the cooled cake were not made with so great degree of care as to thickness, being from half an inch to an inch or more thick.)

Moreover, to my mind, either one of the two methods, namely, that of complete solidification or pressure between hot plates, introduces a very decided obstacle in the obtaining of an oleomargarine oil suitable for delicate purposes on a commercial scale. It is
425 therefore in my opinion very plainly evident that section four of the American patent, namely, "crystallization in a mass," constitutes a very decided improvement in the American patent as compared with the foreign, and, taken in conjunction with section fifth of the American patent, together with the American patent, a workable process and one capable of yielding a final result devoid of the taste of fat and free from the objectionable excess of

stearine, which to my mind must necessarily be characteristic of the final result of the foreign patents.

In section five of the American patent I find it stated: "He caused the mixture of stearine and oleomargarine to flow into a centrifugal machine called 'hydro-extractor.' The greasy liquid passes through the cloth, and the stearine is collected. When all the liquid is passed he put the machine in motion and the crystals of stearine are entirely exhausted without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine soft enough for rendering necessary the stroke of the press as a last operation."

Now, it is a well-known fact that a centrifugal machine and a press accomplish the same result, and that the one may be used for the other according as the one or the other may be more convenient. Thus in my own experience in the laboratory the separation of homo-globin crystals, for example, of the blood are separated from the plasma or cerum by either a centrifugal or press, so that to my mind the one is the equivalent of the other.

If, now, we compare the fourth and fifth sections of the American patent, namely, crystallization of the stearine from the liquid oil and then separation of the latter by either centrifugal or press at about the temperature of crystallization, namely, 86° Fahrenheit, I consider it, both on theoretical grounds and as a result of actual experiment, a very decided improvement in the character of the product obtained and in the nature of the process in every respect different from the product and process of the foreign patents.

An experiment to demonstrate fully the working of the fourth and fifth sections of the process of the American patent and
426 the character of the resulting product was tried at the manufactory in Brighton in conjunction with Professors Morton and Wheeler. The rendered oil was drawn off from the setting kettle into a seeding can at a temperature of 132 and five-tenths degrees F. It was then placed at once in a room and left all night under the care of a watchman, which room was ordered to be kept at a temperature from 84° to 86° F. On the next morning I personally took charge of the room in which the can stood and saw that the room during the entire day was kept at a temperature of from 84° to 86° F. The following data give evidence of the care which was taken and also of the slight variations in the temperature of the room:

Time.	Temperature.
8.10 a. m.	86° F
8.30 "	86° "
8.45 "	85.5°
9 "	85.5°
9.10 "	85.5°
9.20 "	85.5°
9.30 "	85.6°
9.45 "	85.8°
10 "	85.8°

10.10 a. m.	85.8°
10.20 "	85.8°
10.30 "	85.8°
11.40 "	85.5°
12.20 p. m.	85.2°
1.10 "	85.0°
2.40 "	86.0°
5.15 "	86.0°

Standing at this temperature undisturbed, a fine crystallization of the stearine took place while the oleomargarine remained as an oil liquid. When crystallization of the stearine was deemed complete, the entire mass was stirred with a paddle, the mixture of fats having the appearance of a thin mush, showing in this respect a very decided difference from the entire solidification of the foreign patents.

427 This semi-fluid mixture of stearine crystals and oleomargarine oil was taken up in a scoop ladle, small portions at a time placed upon cloths, which were in small boxes to receive it, since the fatty matter was too fluid to have any form of its own, then wrapped in the cloths, placed upon the plates of the press, and subjected to a pressure of three hundred and sixty-five tons to the square inch.

Carrying out this experiment in the manner described, we obtained eighty and one-half per cent. of oil while nineteen and one-half per cent. of stearine remained, being retained in the form of a white cake in the cloths between the iron plates of the press.

The oil so obtained was free from all objectionable features, being devoid of all odors or tastes characteristic of the greasy fats, and was in all respects, so far as could be observed, similar in its character to molten butter.

(Recess.)

Having now compared those sections of the American patent which have to do with the preparation of the oleomargarine oil with the corresponding sections of the foreign patents, I now state that the process specified in the above five sections of the American patent differs most decidedly in its nature from the process contained in the foreign patents, and that the resulting product, namely, the oleomargarine oil, obtained by the American patent is totally different in character from the product obtained by the use of the foreign patents.

This difference in the nature of the process I find to apply not only to the process in its entirety, but also to the individual steps of the process, as follows: The first section of the foreign patents I find to be designed solely for the complete washing of the fat, while the corresponding section of the American patent—that is, the second—I find to be designed for the mechanical liberation of the contents of the fatty globules. The second section of the foreign patents I find to be designed for the liberation and melting of the contents of the fatty globules, while the corresponding section of the foreign patents—that is, the first part of the third—I find to be

designed for the liberation of the contents of such of the fatty globules as have not already been broken by the com-
428 plete bruising of section two, and further for the melting of such liberated fatty matter, but the latter under such condition (already specified) as materially modifies the character of the resulting product. The latter half of the third section of the American patent I find to be designed for the complete separation of the fatty matter as a perfectly limpid liquid, a process wholly wanting in the corresponding section of the foreign patents. The fourth section of the American patent I find to be like the latter half of the third section—a substantial addition to the foreign patents, which, in part, tends to give to the product of this American patent its peculiar properties. The fifth section of the American patent, constituting the last in the preparation of the oleomargarine oil, I find, likewise, to be decidedly different from the corresponding section of the foreign patents, the pressing with hot plates, characteristic of the latter, being decidedly deleterious.

Q. 4. Have you, with Professor Morton, prepared a table of comparisons of the Mége foreign and American patents and of these patents with the process of defendants? And, if so, please look at "Complainants' Exhibit Morton Comparison Table" and state whether or not this is the exhibit you assisted in preparing, and whether or not it is a correct statement of comparison between such patents and processes to the extent it therein professes to point out, distinguish, and identify the same.

A. I have prepared such a table with Professor Morton and consider it a correct statement of comparison between the patent and processes specified, so far as it therein professes, and I identify the complainants' exhibit as the table in question.

Q. 5. As I understand you from your testimony in your recent experiments at Brighton, Massachusetts, you carried out literally or substantially the first five steps of the Mége patent sued upon to the extent even of the slight proportion of so-called gastric juice mentioned in the first part of the third step; is this correct?

(Objected to as leading, and also because the details of those experiments already given by the witness is the best and only competent evidence on this point.)

429 A. I did carry it out in all its details, even to the point of employing the quantity of digestive mixture specified in the patent.

Q. 6. You have stated that you have read and are familiar with the stipulation exhibit in this case, setting forth the defendant's process, with the exception of some slight details testified to by the defendant's witness, to the effect that the fat when it entered the melting kettle from the hasher was pasty or pulpy in its hashing or comminution. I will now ask you whether or not you have faithfully and literally followed and carried out in practical operation and working the process of defendants evidenced by this stipulation and secured the results of the product therefrom?

(Same objection.)

A. I have faithfully carried out the process specified in your question and have obtained the resulting product.

Q. 7. Will you please now state to the court whether there was, is, or can be the slightest substantial difference of any description between the process of the Mége patent sued upon and the defendant's process, as evidenced by this stipulation, or in the resulting products therefrom, either in the taste, smell, or composition?

(Objected to as leading and also as incompetent in rebuttal, especially as the subject was gone over at great length.)

A. I know of no substantial difference whatever between the defendant's process, as specified in the stipulation, and the process of the American patent, reissue No. 10137. The only difference whatever in the two processes would be the small admixture of the so-called artificial gastric juice specified in the American patent, which, as I have already stated, constitutes no substantial difference, since its aim is mainly to accomplish the same end as the complete crushing and bruising of all the cells, namely, the liberation of the contents of the fatty globules; for it is a well-known fact that an artfiicial digestive mixture has no action whatever on the contents of the fatty globules and only a peptonizing action on the surrounding tissue, and could by no means impart to the fat any butter-like flavor.

Moreover, such products as might be formed from the
430 organized tissues present, namely, peptones or other products, would tend to introduce nothing more than a bitter or other disagreeable taste or flavor. A comparison of the two products, namely, that resulting from the American patent and that from the defendant's process, leads me to believe them of like composition, as they certainly were in taste, smell, and in all other noticeable respects.

Q. 8. I call your attention specifically to the deposition of Professor Barker, wherein he states or attributes the molten-butter flavor of the product of the Mége patent at the point subsequent to its separation from the tissue to the slight gastric-juice treatment mentioned in the first part of the third step. I will now ask you to state specifically whether there is the slightest justification or excuse in science, experience, or in any known fact for such a statement or suggestion on the part of Professor Barker.

A. I know of no justification whatever for the statement specified in your question. There is certainly in the literature of the subject no authoritative statement for such a belief. My own experience in connection with many experiments conducted in my laboratory on the action of artificial and natural gastric juice or fatty and other tissues lead me to believe in the incorrectness of such a statement as specified in your question. Moreover, it is a fact well known, as I have already stated, that the products of a gastric digestion are usually possessed of a more or less bitter taste.

Q. 9. As I read Professor Barker's deposition, he has attempted to impress the court with the belief that the new and improved material called for by the first claim of the Mége patent sued upon is sub-

stantially identical with natural butter or butter produced from the cream of a cow, without any distinguishing characteristics whatever. I will now ask you whether or not there are any differences between the improved material of the first five steps of the Mége patent sued upon and the butter product of the cow, which particularly distinguishes one from the other, and what is the practical effect of any such differences, if you know?

431 (Objected to; and counsel for defendant calls the attention of counsel for complainants to what Professor Barker actually said, which is as follows: "Mége says of his product, this greasy matter must not have any taste of fat; it must, on the contrary, have the taste of molten butter." "It would seem, therefore, that the artificial digestion process employed by him did result in the production of a substance having the taste of butter; so that the product as well as the process sustained his physiological theory of the similarity of the action in two cases—*i. e.*, the natural and artificial process." And also, "The product, after pressing out the stearine, is a soft fat, slightly yellowish in color, with no taste or smell of animal fat, with a special odor differently described in the different foreign patents, and which is composed, as is distinctly stated in the English patent and in the first American reissue, like butter, of oleine, margarine, and a little odoriferous oil," and also his quotation from the opening sentence of Mége's American patent: "Invent an improved means for transforming animal fat into butter.")

A. There is a decided difference in chemical composition between the product resulting from the first five steps of the American patent sued upon and natural butter, namely, the product resulting from the cream of cow's milk. While the difference is not so great quantitatively (the natural butter containing six to eight per cent. of the triglycerids of the volatile fatty acids, namely, butyric, caproic, and others), still these bodies mentioned in the parenthesis give to the natural butter certain characteristics which tend to distinguish it from the product of the first five steps of the American patent. The practical effect of the presence of these bodies in natural butter, which, if contained at all in the oleomargarine oil are in exceedingly minute quantity, tend to render the natural butter more prone to change, and thus cause it to acquire on standing disagreeable and objectionable properties or characters. The oleomargarine oil, on the other hand, being free from any noticeable quantity of the above-mentioned triglycerids, is therefore much more liable to preserve its original characters.

432 Q. 10. Is fat a good or bad conductor of heat?

A. It is a poor conductor of heat.

Q. 11. What have you to say as to the susceptibility of finely organized fats like the product of the first five steps of the Mége patent or cream butter to absorb and retain odors or flavors with which they may come in contact or in whose presence they may be brought or subjected even at considerable distances apart between the fats and the odoriferous bodies or causes?

(Objected to as immaterial.)

A. It is a fact well known that fatty matter, particularly when in a fine state of emulsion, possesses the power of absorbing and retaining odors which may be more or less closely adjacent to them. Perhaps the most common illustration of this is the well-known fact that butter, for example, or even cream, when placed in a refrigerator with the articles of food, such as fish, will absorb and retain the particular odor emanating from the food in question. That this is a widely known fact is evident by the habit which people have of using two refrigerators, one for their butter, milk, and cream, and the other for meats, fish, and other articles of food possessed of more or less odor. Another well-known illustration of the same fact is the methods used by perfumers and others by extracting natural odors contained in certain leaves of flowers by placing them between layers of prepared fatty matter which extract the odor, thereby making odoriferous pomades or other products.

Q. 12. I see by reference to the translation exhibit of defendants of the Mége Austrian and Bavarian patents that under the first step or head of "perfect washing" in the Austrian patent and under the first head or step called "washing and crushing" in the Bavarian patent, in speaking of the subdividing of the fat, — has used the words "finely subdivided" and "subdivided finely" in this connection. Will you please state whether this is a correct translation and whether there is any authority in the original patents for the use of the word "finely" in this connection?

(Objected to because the witness has said that he was not an expert in translating the language.)

433 A. I have carefully examined the original Austrian and Bavarian patents and can find no justification whatever for the insertion of the word "finely," as specified in your question. I find in the American patent the following sentence or portion of a sentence: "Das druch das wasser and den druch zertheilte fett," which, as I translate it, means simply "the fat subdivided by the action of the water and pressure." If it was the intention to express fine division the German language is provided with adjectives well adapted to express such a fact; for example, the word "fein," which has the exact meaning of the English equivalent.

In the Bavarian patent I find it written in the original "es theist sich," which means simply "divided" or "subdivided." It may mean also "separate." There is certainly no justification for the insertion of the adverb "finely."

Complainants' counsel here closes the direct examination of this witness to Saturday, September 20, at 11 o'clock a. m., for cross-examination.

Adjourned to September 17, at 11 a. m.

Cross-examination of RUSSELL H. CHITTENDEN:

Complainants' counsel here states that to avoid, if possible, the tedious and to him apparently inexcusable delay of the week or ten

days' cross-examination of the last witness (Professor Morton) upon the present witness, Professor Chittenden, he has for this purpose requested Professor Chittenden to read entire the direct and cross examination of Professor Morton, in the sole hope of obviating the cross-examination forced upon Professor Morton for so long a space of time, and now asks the witness to this end if he has read such direct and cross examination of Professor Morton and agrees with him substantially and in all essential matters expressed in his deposition.

Professor Chittenden answers: I have read the direct and cross examination of Professor Morgan in its entirety, and agree
434 with him, as specified in your question, and in the opinions which he has expressed and in the statements which he has made.

(Counsel for defendant states that as the direct examination of the witness covers substantially the same ground as the direct examination of Professor Morton, and inasmuch as the witness thus deliberately adopts and makes his own the answers of Professor Morton in his extended cross-examination, he (counsel for defendant), for the purpose of saving time and ending a prolonged sitting, also accepts the cross-examination of Professor Morton as the cross-examination of the present witness, Professor Chittenden.)

(It is agreed that the cross-examination of Professor Morton shall be deemed and regarded as the cross-examination of Professor Chittenden.)

R. H. CHITTENDEN.

Sworn to before me September 20, 1884.

ASA F. SMITH,
Notary Public, Kings County.

Certificate filed in New York county.

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

SOUTHERN DISTRICT OF NEW YORK,
State, City, and County of New York, } ss:

I, Asa F. Smith, a notary public for the county of Kings and State of New York, authorized by law to administer oaths and take depositions in the city and county of New York, a special examiner, do hereby certify that on the 25th day of August, 1884, and on the successive days thereafter in the foregoing depositions named
435 I was attended in the city of New York, as therein stated, by the counsel for the respective parties in the above-entitled action and by the following-named witnesses: Henry A. Mott, Jr.,

Charles H. Deshler, Martin L. Pendleton, Ruben W. Reed, Herman Knubel, John D. Peck, Henry A. Morton, C. Gilbert Wheeler, and Russell H. Chittenden, each of whom were of sound mind and lawful age, and each of said witnesses were by me first duly sworn to testify to the truth, the whole truth, and nothing but the truth as to the matters to be inquired of, and were carefully examined, and each question and answer on such examination was reduced to writing by me or in my presence and in the presence of said witnesses, and said witnesses severally subscribed the same under oath in my presence, only excepting C. Gilbert Wheeler, whose further examination was, by consent, adjourned to Chicago, as appears by his said deposition.

And I do certify that I am not counsel or attorney for either of the parties in said deposition and caption named, nor in any way interested in the event of such case named in said caption.

In witness whereof I have on this twenty-second day of September, A. D. 1884, hereunto set my hand and official seal.

ASA F. SMITH,
[SEAL.] *Notary Public, Kings County.*

Certificate filed in New York county.

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Equity.

At Chicago, in the northern district of Illinois, on this 19th day of November, 1884, at 10 o'clock a. m., before me, Frederick C. Goodwin, a notary public within and for Cook county, Illinois,
436 residing in Chicago, in said district, at the office of Offield & Towle, room 14, McCormick block, Chicago, Illinois.

Present: H. S. Towle, on the part of said complainants, and T. S. E. Dixon, on the part of the defendant.

The complainants produce C. Gilbert Wheeler for cross-examination, pursuant to the written request of the solicitors for the said defendant.

And thereupon the following proceedings were had before me in said cause:

Counsel for defendant, in reply to the letter from George Harding to Charles D. Deshler, dated September 15, 1884, offered in evidence by counsel for complainants, here offers in evidence the original letter from George Harding to Professor George F. Barker, dated February 9, 1882, and which reads as follows:

(*Dictated Letter.*)

OFFICE OF GEORGE HARDING,
NEW YORK, *Feb.* 9, 1882.

Prof. Geo. F. Barker, Philadelphia, Penn.

DEAR SIR: On my return to the city this morning I found your note.

I learned from the U. S. Dairy Co. that you are retained in the suit of the U. S. Dairy Co. against Swarzchild & Sulzberger, and that they expect to call on you as this suit progresses. I believe you gave an affidavit in that suit on behalf of the plaintiff. It is our custom to retain experts in particular suits, and I understand, on inquiry, that the case in which Mr. Thompson wants you to engage is probably that case.

I may not be able to communicate with the officers of the Co. during this week, but I do not wish you to understand from my conversation that I wish to relieve you from the effects of the retainer in the suit against Swarzchild & Sulzberger, as I have no power from the Co. to do so.

Very truly,
(Signed) GEO. HARDING,
G.

437 Notary is requested to mark said letter for identification "Defendant's Exhibit Geo. Harding Letter to Prof. Barker, Feb. 9, 1882."

Complainants' counsel objects to the introduction of this paper in evidence as incompetent and irrelevant, and for the additional reason that it appears from the face of the paper itself that it is not the letter of Geo. Harding.

Counsel for defendants also offers in evidence a copy of a letter from Prof. Barker to Geo. Harding, dated February 8, 1882, to which the foregoing letter was a reply, and which reads as follows:

PHILA., *Feb.* 8, 1882.

Geo. Harding, Esq.

MY DEAR SIR: Mr. E. G. Thompson, of New York, has asked me if I would accept a retainer from him in a suit against the U. S. Dairy Company. I have said to him that two years ago I was retained in a previous suit by the U. S. Dairy Co.; and although that retainer, which I believe was an annual one, has long since run out, yet I felt that courtesy required me to inform you as the counsel through whom my retainer came before accepting his offer. From your remark on the train I infer you have no objection. I will answer him to that effect the last of the present week if I do not hear from you before that time.

Yours truly,
(Signed) G. F. B.

The notary is requested to mark said letter for identification "Defendant's Exhibit Letter Prof. Barker to Geo. Harding."

(Objected to as incompetent and irrelevant and not the best evidence.)

Counsel for defendant also offers in evidence the original letter from Prof. H. A. Mott, Jr., to Prof. Geo. F. Barker, dated March 7, 1880, and which reads as follows:

438 H. A. Mott, Jr., Ph. D,. E. M., analytical and consulting chemist; assays of ores, analyses of minerals and articles of commerce; office, 117 Wall St.; house, 30 W. 59th St.

NEW YORK, *M'ch* 7, 1880.

Prof. Geo. F. Barker.

MY DEAR SIR: Will you join Prof. Chandler and myself in this city next Thursday to investigate into the process of manufacture of oleomargarine butter, as also more particularly as to its wholesomeness?

I am authorized to retain your services in a suit brought by the United States Dairy Co. I informed the Co. that your retaining fee will be $250, and that for all time you occupy in making experiments (as we will have to make a great many) will be at the rate of $50 per day. If I am incorrect, please set me right.

Please telegraph me at once if you will accept. I am going to write to Johnson and Goessmann and perhaps to Caldwell to be here also. We will meet at Chandler's house at ten o'clock.

Awaiting your reply, I am yours very cordially,

MOTT.

The notary is requested to mark said letter for identification "Defendant's Exhibit Letter from Professor Mott to Professor Barker, dated March 7, 1880."

(Last objection repeated.)

C. Gilbert Wheeler, the witness now on the stand, desires to make the following correction in the testimony heretofore given by him, and states as follows:

"I find on reading the testimony on direct examination that the notary had misunderstood me. In answer to Q. 26 he erroneously put down the figures 80.5 per cent. and 19.5 per cent., but it should have been, respectively, 83.4 per cent. and 16.6 per cent.

Cross-examination waived.

C. GILBERT WHEELER.

Subscribed and sworn to this 19th day of November, A. D. 1884, before me—

FREDERICK C. GOODWIN,
Notary Public.

[SEAL.]

439 UNITED STATES OF AMERICA, *Northern District of Illinois,* } ss:

I, Frederick C. Goodwin, a notary public in and for the county of Cook, in the State of Illinois, in the district aforesaid, do hereby

certify that the foregoing proceedings were had before me in said cause at the time and place therein specified; that said complainants were present by their counsel, H. S. Towle, Esq., and said defendant by its counsel, T. S. E. Dixon, Esq., as therein appears, C. Gilbert Wheeler, a witness, being produced by said complainant for cross-examination, at the request of counsel for said defendant, and such cross-examination was waived.

And I do further certify that I am neither attorney nor of counsel for any of the parties in said caption named, and am in nowise interested in the result of said cause.

In testimony whereof I have hereunto set my hand and notarial seal this 19th day of November, A. D. 1884.

FREDERICK C. GOODWIN,
[SEAL.] *Notary Public.*

440 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

At Chicago, in the northern district of Illinois, on this 26th day of September, A. D. 1885, at 9.30 a. m., before me, Frederick C. Goodwin, a notary public within and for Cook county, Illinois, residing in Chicago, in said district, at my office, room 99, 185 Dearborn street, Chicago, Illinois.

Present: C. K. Offield, Esq., on the part of said complainants, and L. Hill, Esq., on the part of said defendants; and thereupon the following proceedings were had before me in said cause, pursuant to notice hereto annexed.

And thereupon complainants' counsel calls Mr. J. C. ROCKWELL as a witness in their behalf, who, being by me duly sworn to testify the truth, the whole truth, and nothing but the truth in said cause, deposes as follows, in answer to interrogatories propounded to him by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. Name, J. C. Rockwell; age, 61; residence, Walworth, Wisconsin; occupation, proprietor summer resort place at Geneva Lake.

Q. 2. Please state briefly what experience you have had in the production of oleomargarine oil in this country and where such experience was attained.

A. First, at Hartford, Connecticut, in the year 1874; second, at Hammond, Indiana, I think, in 1875. I am not certain as to date. I then visited and seen in operation oleomargarine factories at Providence, R. I.; New Haven, Conn.; the Commercial
441 Manufacturing Company of New York; National Dairy Company of Chicago; Fairbank Canning Company of Chicago; Schoeneman Bros.; Armour & Co.

Q. 3. Did you personally manufacture oleomargarine oil at Hart-

ford in 1874; and, if so, for how long a time and under what authority?

A. I commenced about March 1st and continued the manufacture until about November; indirectly under the Mége patent. Indirectly, the patent of the State of Connecticut was owned by the New Haven Company. I worked under their license; paid a royalty of two cents a pound.

Q. 4. At that time were there any oleomargarine factories in the United States except those manufacturing under this Hippolyte Mége patent?

(Objected to as not in rebuttal and as immaterial, irrelevant, and incompetent.)

A. None to my knowledge.

Q. 5. Since the year (March) 1874 have you been more or less familiar with the manufacture of oleomargarine oil in this country?

(Same objection.)

A. I have.

Q. 6. Did you read last week, at my request, the depositions of Mr. George Fitzmaurice and Gilbert A. Peck, relating to certain alleged experiments in the production of oleomargarine oil made in behalf of the defendants in this suit?

A. I did.

Q. 7. Did you understand fully the testimony given by those witnesses?

A. I think I did.

Q. 8. Please state whether or not you followed precisely and exactly in all material respects the experiments in the production of oleomargarine oil testified to by said witnesses, Peck and Fitzmaurice, and whether you kept memorandums of the same so that you now have actual figures and facts regarding such experiments.

(Objected to as not in rebuttal and as immaterial, irrelevant, and incompetent; also as leading and calling for an opinion.)

A. I did.

442 Q. 9. Will you please now state succinctly and in detail the exact experiments which you tried, following the testimony substantially as indicated in the deposition of Mr. Peck?

(Same objection.)

A. On September 22d, at 11.20 a. m., I commenced hashing fat suitable for oleomargarine purposes. I finished hashing at 11.52 a. m., temperature 116° F.; drew from melting kettle into the settling kettle 12.40 p. m., temperature 120°; drew stock from the settling kettle into a seeder at 2.40 p. m., temperature 120°; put stock in this seeder into a room partitioned off from the main seeding-room, provided with lock and key immediately; temperature of room at that time 80°; kept the stock in room until 10 o'clock p. m.; temperature 80° until September 24th. I then put ninety-one pounds of this stock thoroughly mixed in a tin box, dimensions of which

were twenty inches long, twelve wide, fourteen inches deep; covered and surrounded same with fine broken ice; took stock out of box at 11 a. m. September 25th; found temperature of same to be 67° outside and 96° inside; commenced pressing the same 11.42 a. m. September 25th between iron plates, the temperature 100° F; first oil appeared at 12.04 p. m.; safety valve lifted at 12.07 p. m.; first cloth broke at 12.07; finished pressing at 2.47 p. m.; engine ran at forty; slowed down to twenty-five revolutions; regular speed ninety; oil showed stearine to taste. Results, thirty-one and three-quarters pounds of oil, four pounds of stock pressed out of broken cloths, fifty-three and three-quarters pounds of stearine; total, eighty-nine and one-half, which was the number of pounds put into press.

Q. 10. Was this fat which you used to produce the oil to make this experiment a good, fair quality for that purpose?

(Same objection.)

A. In my judgment fair, average quality.

Q. 11. Was the temperature of this partitioned room kept at 80° during the time this stock remained in the seeder, from the morning of the 22d until the night of the 24th inst.; and, if so, how do you know this fact?

(Same objection.)

443 A. I had full control of this room and occupied the same during this time; took the temperature every two hours; never found it under 80° or over 82° F.

Q. 12. What mode of access or egress was there to that partitioned room?

(Same objection.)

A. There wasn't any. There was but one door into this room, which was provided with a lock, and I always had the key to lock the same.

Q. 13. Did you occupy this room nights?

(Same objection.)

A. I did.

Q. 14. What other or additional experiment did you try, if any, to satisfy or make absolutely certain the results of the one just given? Please give it in detail.

(Same objection.)

A. On September 22d, 3.40 p. m., I commencing hashing for this purpose, and finished hashing at 4.20 p. m.; temperature of stock in melting kettle at that time 118° F.; drew stock from melting kettle into settling kettle at 5.30 p. m., the temperature of which was 120°; drew stock from melting kettle into seeder at 7.45 p. m., temperature 120°; immediately put in room with test No. 1; temperature of room 80°. At 10 o'clock p. m. September 24th put ninety-one pounds in tin box, dimensions twenty inches long, twelve wide, and fourteen high; surrounded into seeder with the

first box, and surrounded same with ice; removed the stock from the box at 1.15 p. m. September 25th; found the temperature of same stock to be 67° outside and 96° inside; cut same into pieces one inch thick; wrapped it in clean dry cloths; placed them in press with clean iron plates; head at a temperature of 120°; commenced pressing at 2.05 p. m.; first oil appeared at 2.30 p. m.; finished pressing at 5.05 p. m. Results, forty-five pounds and a half of stearine, forty-four pounds of oil; total, eighty-nine pounds and a half, which was the number of pounds put in press. The oil plainly showed stearine to the taste.

Q. 15. Was this second seeder or experiment kept in the same room and temperature as the first you have described all the time?

(Same objection.)

444 A. It was.

Q. 16. What means was used in pressing this eighty-nine pounds and a half of chilled stock so that you are absolutely certain that all the oil and only the oil pressed from this stock was secured?

(Same objection.)

A. There was a pan made purposely for this experiment, which was placed in the press over other stock that had been pressed previously, so that all the oil and stearine that was pressed out of the stock or melted through the means of these plates at 120° was caught from the spout leading out from this pan into a clean tin box used for this purpose. This was the same kind of a pan used in the first experiment.

Q. 17. How many layers of chilled stock were placed in this pan and how many used in this pressing? Give the size of these plates approximately.

(Same objection.)

A. There were five plates used, with four layers, nine cakes in each layer between each plate. The size of plates I should judge to be three feet by five. I never measured them.

Q. 18. What was the pressure applied in both experiments in extracting the oil and stearine?

(Same objection.)

A. The press registers 400 tons and was used most of the time to its full capacity. We had to check-press the power often, owing to the bursting of the cloths, and slow the engine down from twenty-five to thirty.

Q. 19. For how long a time was each of these eighty-nine and one-half pounds of chilled stock continuously under this pressure of 400 pounds?

(Same objection.)

A. Three hours and five minutes.

Q. 20. Was this mixture of oil and stearine which you obtained

from each of those experiments a good or merchantable article of oleomargarine oil?

(Same objection.)

A. I do not so consider it. In the first experiment, where the plates were kept to 100°, the stearine run out through the oil and was perceptible to the eye. In the other experiment, where
445 the plates were kept at 123° F., the oil and stearine run out together and was only perceptible to the taste, which was very plain and deteriorating — its quality.

Q. 21. As I understand you, in both of these experiments given the raw fat was melted at a temperature of 120° and was held or settled in the settling kettle at 120°. Is this correct?

(Same objection.)

A. It is.

Q. 22. At what temperature was the press-room kept at the time these two lots of chilled stock were pressed, as you have described—I mean during the three or four hours it took to press such stock?

(Same objection.)

A. From 80° to 82°.

Q. 23. Can oleomargarine stock be seeded or granulated in a room kept at a temperature continuously of 80° or 81°, so as to permit of such granulation or seeding from which a practical and merchantable oleomargarine oil can be extracted by any pressure or by any means?

(Same objection.)

A. My practical experience is decidedly that it cannot.

Q. 24. What was the size of the two seeders in which this stock was put to be seeded in this seeding-room at a temperature of 123°?

(Same objection.)

A. They were five foot long, three foot wide, twenty inches deep, inside measure.

Q. 25. How much stock was put in each of these seeders in which each eighty-nine and one-half pounds were taken to make the experiment?

(Same objection.)

A. It was not weighed, but came within ten inches of the top of seeding.

Q. 26. From the time these two seeders went into that partitioned room on the 22d of September until the time the eighty-nine and one-half pounds of stock were taken from them to be chilled on the night of the 24th, state whether or not those two seeders were moved around or disturbed in any manner, or whether or not anything was added to or taken away from the contents of those seed-
446 ers; in short, whether or not anything was done to them which would prevent or disturb in any respect the seeding of

the stock in the best manner which could be carried on under a temperature of 80°.

(Same objection.)

A. There was not.

Q. 27. You speak of the temperature of that chilled block of oleomargarine stock being 67° on the outside and 96° on the inside at the time you sliced it into cakes of an inch thick, on September 25th, to be pressed. Please explain to the court why it is that the internal portion of such stock, even under an ice application, retained so high a degree of heat so many hours and days after it was first passed into the seeding-room.

(Same objection.)

A. The iced application chills the outside so rapidly that it forms a hard crust so solidified that the internal heat of the contents of the stock in the tin box were retained and could not pass out, which accounts, in my experience, for the difference in outside and inside temperature.

Q. 28. In your opinion and experience, can oleomargarine stock ever be chilled so as to become in such a solid condition as to be sliced into cakes, and in this condition ever have a practical and successful quality or quantity of merchantable oleomargarine oil extracted from it or separated from it by means of hot plates in a press?

(Same objection.)

A. It cannot.

Q. 29. In your experience, whenever by mistake or otherwise the temperature of the seeding-room went down to 80° for any length of time, what was then done with such stock in that seeding-room?

(Same objection.)

A. The vital point of seeding stock is the temperature when it is first drawn from the settling kettle. If the temperature then is 80° or below it chills so quick that it stops the seeding or separation from the oil of the stearine. In such cases the stock has to be remelted to get a first quality of oil and general results.

Q. 30. What is the best or necessary temperature to seed oleomargarine stock for the production of a merchantable or marketable quality of oil?

(Same objection.)

447 A. My practical experience has been that 90° is the best average temperature.

Recess until 1.30 p. m.

Cross-examination by L. HILL, Esq.:

Respondent's counsel, without waiving the objections hereinbefore taken, will cross-examine *de bene esse.*

C. Q. 31. You made two experiments at the works of the National Dairy Company, about which you have testified, did you?

A. I did.

C. Q. 32. Did you, in both experiments, melt the fat in the same kettle?

A. I did.

C. Q. 33. And settle it in the same settler?

A. We used different settlers.

C. Q. 34. What difference was there between the two settlers?

A. No difference.

C. Q. 35. In both experiments did you use the same seeder?

A. No, sir; I had two different seeders of the same dimensions.

C. Q. 36. Please state the dimensions of the seeders.

A. Five feet long, three feet wide, and twenty inches deep, inside measure.

C. Q. 37. They were filled to about ten inches from their top?

A. Yes, sir.

C. Q. 38. Then the body of stock that you seeded was in each case about five — long, three feet wide, and ten inches deep?

A. I want to correct that. I remember, since thinking that matter over, that it was eight inches from the top, as the stock was twelve inches deep, which would make twenty. The stock was five feet long, three feet wide, and one foot deep.

C. Q. 39. Were those seeders in the room partitioned off from the main seeding-room and provided with a lock and key?

448 A. Yes, sir.

C. Q. 40. All the time while the seeding was going on?

A. Yes, sir.

C. Q. 41. Am I to understand that you kept the temperature of that room at 80° Fahrenheit during the seeding process?

A. It never was below eighty and but little above.

C. Q. 42. How was that room warmed?

A. There was steam-pipes for heating the rooms running all around this building. I never used them but three days during the time, and that was in the morning, as it was a little cool. The heat from the main seeding-room coming in there kept the temperature at just about even 80°; never under that.

C. Q. 43. Do you know the temperature in the main seeding-room?

A. No, sir.

C. Q. 44. How large was that room that was partitioned off for the purposes of that experiment?

A. I never measured it accurately. I stepped it and made it 20 x 24, with the exception of one corner, that was cut off, where the elevator ran.

C. Q. 45. Were there any windows in it?

A. There were three windows in it.

C. Q. 46. How large were those windows and where did they open?

A. Two of the windows opened onto the street on the east side of the building. I don't know the name of the street. One window opened over on the south side of the building, over a shed roof.

C. Q. 47. Were any of those windows open at any time during the seeding?

A. Yes, sir.

C. Q. 48. Which windows, and how much of the time?

A. I opened the south window and one of the west windows several times for the purpose of lowering or keeping the temperature down to eighty. I lowered the south window at the top and the east windows at the bottom, as the bottom sash of the south window was nailed down.

C. Q. 49. Did the partition run clear up to the top of the room?

449 A. Yes, sir.

C. Q. 50. Was the room*ed* closed at the corner where the elevator was?

A. Yes, sir.

C. Q. 51. And the only opening into the room was the three windows and the door. Is that correct?

A. The only opening through the partition was one door. On second thought, I won't be certain; there might be three windows on the east side of the room. There was a curtain over all the windows.

C. Q. 52. This door and these windows were the only openings into the room, were they?

A. Yes, sir.

C. Q. 53. In what part of the room did the seeder set while the seeding was going on?

A. One of them sat over near the center of the room, close by the wall, on the east side, and the other sat in the southwest corner of the room.

C. Q. 54. How near were the windows to the seeder which sat by the wall on the east side?

A. I should judge about two feet.

C. Q. 55. How near was that seeder to the wall?

A. About two feet.

C. Q. 56. Did it set right opposite the window?

A. No, sir; it did not.

C. Q. 57. Was any portion of it directly opposite the window?

A. I think the corner came up just about to the corner of the window that I occasionally opened.

C. Q. 58. Did the same heating pipes run along that east wall?

A. Yes, sir.

C. Q. 59. How near were they to that seeder?

A. I should think from one to two feet.

C. Q. 60. How near was that seeder that stood in the southwest corner of the room to any window?

A. There was no window in that portion of the room. It stood as near to the corner as it could, so that we could comfortably pass around it.

C. Q. 61. How near was it to the door?

A. I should judge that the corner of the seeder would come within six feet of the door.

450 C. Q. 62. Name all the persons that were in that room during those experiments, from the beginning to the end.

A. C. K. Offield, James M. Davis, Charles L. Rogers. That is all.

C. Q. 63. Is Mr. Rogers employed there?

A. He was.

C. Q. 64. And Mr. Davis also?

A. Yes, sir.

C. Q. 65. When did you first go to the National Dairy Company's works for any purpose connected with this case?

A. On the morning of the 22nd of September.

C. Q. 66. Have you related all the experiments that you made or observed there?

A. I speak in relation to the two experiments that I made there. I have made one other experiment.

C. Q. 67. When did you make that other experiment there?

A. I commenced it on Sunday evening, September 20th.

C. Q. 68. What was that experiment?

A. It was an experiment under the regular process of manufacturing oleomargarine oil.

C. Q. 69. Describe it.

(Complainants' counsel objects to this interrogatory and all analogous interrogatories as not cross-examination of any subject-matter called for in the direct, and gives notice that it will be insisted upon at the hearing that any testimony given by this witness regarding such new subject-matter shall be insisted upon as the testimony of the defendants, and it shall also be insisted that they will not be permitted to contradict, criticise, or deny the same.)

451 A. I commenced hashing the fat generally used for oleomargarine purposes on September 20th, 5.30 p. m.; finished hashing at 6.45 p. m.; temperature at that time 116°; drew from melting kettle to settling kettle at 8.40 p. m.; temperature at that time 120°; drew from settling kettle to seeder at 10.40 p. m.; temperature 132°; put this in room partitioned off for purposes of treating these tests; found temperature of room at that time at 86° or near it, and kept it at that temperature until 2.40, the 22nd; kept it in room until the 24th, from that time until the 24th, at a temperature of about 80°, 8 p. m. I then put 91 lbs. of this stock at a temperature of 90° into two tin boxes, dimensions 20 inches by 14 deep and 12 wide; put same in press at 8.45, between plates; temperature of room 81°; at 8.45 commenced pressing; at 9.35 p. m. finished, taking 50 minutes. Result of No. 1 press was 37½ lbs. stearine and 53½ lbs. of oil, making a total of 91 lbs.; second process in second press, 35½ lbs. of stearine and 51¾ of oil, making 87¼ lbs.; deficit in the second pressing, 3¾ lbs., which I account for by the iron plates being a little too large for the pan and punched a hole which I did not discover until after it leaked. I presume, that quantity. The oil obtained in this process was perfectly free from stearine and would be termed No. 1 oil.

C. Q. 70. In this experiment of September 20th to 22nd was the stock chilled to be pressed as described?

A. No, sir.

C. Q. 71. How many experiments did you ever make or see there at those works in which the stock was chilled or any part of it preparatory to pressing?

A. Only two.

C. Q. 72. Were you the only party experimenting there from September 20th until 24th?

A. The only ones that I have any knowledge of.

C. Q. 73. Did you ever witness any experiments there before the 24th of September?

A. No, sir.

C. Q. 74. Have you made or witnessed any experiments in pressing oleomargarine stock at any other place than the National Dairy Company's works within the last three months?

A. I have not.

C. Q. 75. Then the two experiments which you have described in your direct examination are the only experiments that you have made within the last three months in pressing oleomargarine stock that has been chilled?

A. Yes, sir.

C. Q. 76. Who directed those experiments?

A. I did personally.

452 C. Q. 77. How near to that experimental room was the press or presses in which the stock was pressed?

A. On the floor below.

C. Q. 78. What kind of a press was used?

A. It was a hydraulic press which registered 400 tons.

C. Q. 79. Where was the safety-valve which you speak of having lifted at one point?

A. It was in the basement below.

C. Q. 80. Safety-valve on the press?

A. No, sir; on the pump below in the basement.

C. Q. 81. You speak of the speed of the engine being 90 ordinarily. Do you mean in the ordinary pressing of the oil?

A. I mean in the ordinary pressing of oil, as I was informed by Mr. Davis, the foreman and the engineer.

(Statement about the ordinary speed being 90 objected to as secondary.)

(The witness also adds that the raising of the valve was not within his own knowledge, and that is also objected to as secondary.)

C. Q. 82. How much ice did you put in around those pans to chill the stock, as you testify?

A. I never weighed the ice. I can only say as to the dimensions it filled. The two pans were placed in the seeder, and I put in ice enough to come to the top of the pans; probably two or three inches.

C Q. 83. What was in the seeder when you put the pans in it?

A. Nothing.

C. Q. 84. Did you put in both pans at the same time?

A. I did.

C. Q. 85. And you put ice enough around them to fill the seeder up to the top of the two pans?

A. Yes, sir.

C. Q. 86. Did you put in any water, or nothing but ice?

A. Nothing but ice.

C. Q. 87. How long were these pans in the seeder before you took them out?

A. They were put in the seeder, to the best of my recollec-
453 tion, without referring to notes, at 10 o'clock p. m. on the 24th; one of them was taken out at 11 a. m. on the 25th, and the other about 2.30 p. m. of the same day, the 25th.

C. Q. 88. Then one pan was in the seeder about thirteen hours, and the other about sixteen and one-half hours?

A. Yes, sir; there was about three hours' difference.

C. Q. 89. Did you disturb the ice at any time while the pans were in the seeder?

A. I did not.

C. Q. 90. Did you look into the seeder at any time after you put the ice and pans in it?

A. I looked in the seeder the next morning, and did not put any more ice in.

C. Q. 91. Was the ice all melted when you looked in the seeder the next morning?

A. No, sir.

C. Q. 92. What proportion of it was melted?

A. It was down near the level with the top of the boxes; very little on top of it.

C. Q. 93. You mean very little ice on the water?

A. The water on top of the boxes I saw.

C. Q. 94. Am I to understand that you put ice over the boxes when you put them into the seeder?

A. I judge two or three inches.

C. Q. 95. Was that ice put directly onto the stock in the boxes?

A. The boxes were covered tight with tin covers, and the ice was put on top of the covers with a level all over the seeder.

C. Q. 96. How full did the stock fill the boxes?

A. I should think it came within two inches of the top.

C. Q. 97. Did the water run in on the top of the stock as the ice melted?

A. Not a drop.

C. Q. 98. How high up was the melted water when you looked into the seeder in the morning after you put the ice in.

A. I should think about half way up the boxes.

C. Q. 99. When you took those boxes out of the ice in the seeder did you immediately take the stock out and press it?

454 A. Yes, sir—that is, as soon as I could cut it in inch slices and wrap it in cloths and put it into the press.

C. Q. 100. How did you get it out of the boxes?

A. I sprung the sides of the boxes with my hands off of the stock,

then turned them bottom side up and jarred them a little and it dropped down, and raised the boxes off them.

C. Q. 101. Did the stock retain its shape when you dropped it down off the boxes?

A. It did, sir; decidedly.

C. Q. 102. What did you slice it with?

A. With a No. 18 copper wire.

C. Q. 103. Did it slice easily?

A. It was all two men could do to cut it through with the wire.

C. Q. 104. How hard was the stock while you were slicing it?

A. It was thoroughly solidified excepting in the center.

C. Q. 105. How much of the block do you include in the word "center?"

A. I should judge about six inches square.

C. Q. 106. What was the condition of the stock in that center six inches square?

A. It had a cheesy nature, and the temperature was 94 or 96 degrees.

C. Q. 107. What do you mean by a cheesy nature?

A. Well, it was easily cut in the center, not solid or frozen or chilled hard, and had the appearance of solid cheese.

C. Q. 108. And what was the condition of the stock outside of that center—from the center to the periphery?

A. It was very hard; so much so that it crumbled in trying to cut it with a cleaver or knife, and the temperature was 67.

C. Q. 109. The stock at the center did not crumble?

A. No, sir.

C. Q. 110. Was the stock from the periphery to the block at the center granulated?

A. Not in the least.

C. Q. 111. How was it in the block at the center?

A. Was not granulated at all.

455 C. Q. 112. Then it was not granulated anywhere through the block?

A. Not at all.

C. Q. 113. What made it crumble when you attempted to cut it with a knife or cleaver?

A. Owing to its being so hard.

C. Q. 114. How long did you say that it took you to press those blocks of stock?

A. Three hours and five minutes they were in the press under pressure of the full capacity of the press—400 tons, registered.

C. Q. 115. Did it take you the same time to press the stock in both experiments?

A. Yes, sir.

C. Q. 116. You put on the whole pressure at the beginning of the pressing operation, did you?

A. No, sir. I did not count the time until I got the pressure—the capacity of the press.

C. Q. 117. How long was the stock in press?

A. I should judge from ten to fifteen minutes over the three hours

and five minutes in getting the capacity of the press; running the press up, as we term it.

C. Q. 118. How many times did you stop the press from the time you began pressing until the end of the experiment?

A. I don't remember. I have no knowledge of the number of times, but should judge at least a dozen times; but in no instance did we take off the power of the press.

C. Q. 119. You simply stopped the press where it was, and then let it stand?

A. Yes, sir; did not drop the power.

C. Q. 120. How long was the press stopped, on the average, during these stoppages?

A. I should judge from three to five minutes.

C. Q. 121. How did you take the temperature of the center of the block and of the portion between the center and periphery, as you have testified?

A. I had a round glass thermometer with a pointed bulb at the bottom. By working that on the outside I got it in far enough to get the temperature of the outside. It was 67°. After cutting the block in two I put the bulb in the center in the same way and found the temperature 94° or 96°; I don't remember exactly which.

456 C. Q. 122. How long after the pans were taken out of the ice did you then take the temperature?

A. I should judge about ten minutes.

C. Q. 123. What kind of fat was used for hashing for those two experiments in which the stock was chilled?

A. It was fat taken from the entrails of cattle, and, in my judgment, was a fair average quality.

C. Q. 124. Beef fat?

A. Yes, sir.

C. Q. 125. Was it salted?

A. Not in the least; I used some salt during the hashing process in melting it.

C. Q. 126. Was the fat chilled with ice before it was hashed?

A. It was.

C. Q. 127. How long was the fat used after the animal was slaughtered?

A. I was informed that the fat was slaughtered that day.

C. Q. 128. Did you use any kidney fat—fat from the intestines?

A. Not any. I testified already that the fat I used was from the intestines of beef cattle; did not use any kidney fat.

C. Q. 129. In both experiments what was the temperature of the stock while in the seeder?

A. 120°.

C. Q. 130. It was taken at 120° and put into the seeder?

A. Yes, sir.

C. Q. 131. Did you see the fat and stock all the time, from the time when it was hashed until the time it went into the seeder?

A. I was present all the time.

C. Q. 132. Describe how it was taken from the melting kettle into the seeder.

A. It was drawn by a syphon pipe.

C. Q. 133. Describe how it was taken from the settler to the seeder.

A. It was drawn off in the same way in my presence.

C. Q. 134. The seeder was taken to the settling kettle and partially filled, was it?

457 A. Yes, sir.

C. Q. 135. How soon after the stock was drawn from the settling kettle into the seeder before the seeder was put into the experimental room?

A. Immediately after the stock was drawn from the settling kettle into the seeder it was rolled across the room, a distance of about forty feet, into the seeding-room, partitioned off for that purpose.

C. Q. 136. And then you watched it there until the seeding process was complete, did you?

A. I never went out of the room but once during the time; that was for about two or three hours, and I locked the door securely. I had my lunch brought to me and slept on the cot in the room some of the time.

C. Q. 137. How do you know there wasn't anybody in the room while you were gone during those two or three hours?

A. I had the key in my pocket, and the lock was a brass padlock with a spring catch, and I have no knowledge or idea that anybody could have gotten in there without my knowing it, as I was not out of the building during that time.

C. Q. 138. Were the seeders moved during the seeding process in the experimental room or either of them?

A. Never was stirred an inch.

C. Q. 139. Were they covered or open at the top?

A. Open at the top, except one—the last one put in. I threw a window shade over the top of it to keep the flies out for a short time.

C. Q. 140. Which seeder was that?

A. I think it was the last one we filled. I know it was the last one we filled.

C. Q. 141. The one at the east side or in the southwest corner of the room?

A. Southwest corner.

C. Q. 142. Did the sun shine in on that stock in the seeder?

A. No, sir.

C. Q. 143. How did that stock seed in the seeders, and how soon was it before you noticed that the stock had crystallization in the center of the seeders?

A. It never crystallized at all.

458 C. Q. 144. What did it do?

A. It chilled, formed a hard coat on top and a sort of putty, soft nature down in the center; was not separation of the oil from the stearine that was visible to the naked eye.

C. Q. 145. How soon after the stock was put in the seeders did it form the hard coat on the top?

A. Commenced forming directly; I noticed it in particular the next morning.

C. Q. 146. Did the hard coat extend all over the top of the stock the next morning?

A. It did, and was three to four inches thick.

C. Q. 147. What morning was that?

A. The morning of the 23rd.

C. Q. 148. At what time in the morning was it?

A. I should judge about 8 o'clock.

C. Q. 149. And then the stock remained in the same seeders until the next evening?

A. Remained in the same seeders until I put it in the tin pans for the purpose of chilling it on the evening of the 24th.

C. Q. 150. How completely was the stock seeded when you took it out on the evening of the 24th?

A. There was no seeding perceptible to the eye.

C. Q. 151. It was just simply hardened or consolidated?

A. Yes, sir.

C. Q. 152. Did you stir it up before you took it out and put it in the tin pans or was it too hard to stir?

A. I stirred it up the best I could with my hands.

C. Q. 153. But you couldn't do it very thoroughly?

A. No, sir.

C. Q. 154. Was there any liquid oil visible in it or through it?

A. Not a particle.

C. Q. 155. Was any water in the bottom of the seeder?

A. Not a particle.

C. Q. 156. I mean when you took the stock out or attempted to stir it up.

A. I didn't take all the stock out; I only felt down and didn't find any signs of water.

459 C. Q. 157. How thoroughly did you chill the fat before it was hashed?

A. As we usually chill it. There was ice put in the cold water, and I examined it thoroughly and cut some of the pieces in two with a knife and found there was no animal heat in it at all, and it was what we call thoroughly chilled.

J. C. ROCKWELL.

Subscribed and sworn to this 26th day of September, A. D. 1885, before me—

FREDERICK C. GOODWIN,

[SEAL.] *Notary Public.*

Adjourned until Monday, September 28, 1885, 10 o'clock a. m.

MONDAY, *September* 28, 1885—10 o'clock a. m.

Parties met pursuant to adjournment.

Present: Same as before.

And thereupon complainants' counsel calls Mr. JAMES M. DAVIS as a witness in their behalf, who, being by me duly sworn to testify

the truth, the whole truth, and nothing but the truth in said cause, deposes as follows in answer to interrogatories propounded to him by C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. Name, James M. Davis; age, 30; residence, Chicago; manufacturer of oleomargarine oil.

Q. 2. What relation have you, if any, with the National Dairy Company, one of the corporation complainants in this suit?

A. I am the treasurer and manager of their business.

Q. 3. Where is that business carried on and how long have you held the positions indicated?

A. The business is conducted at Nos. 2601 to 2609 Archer avenue, Chicago. I have held the positions that I now have since December, 1879.

460 Q. 4. Please state how thoroughly familiar you are with the practical manufacture in all its stages of oleomargarine oil and how you obtained such familiarity.

A. I am as familiar with the manufacture of the product named as a man could well become with that experience and have given close attention to it ever since I became familiar with it, and that is the only way one can become familiar with it—watching its details.

Q. 5. Have you read the depositions, at my suggestion, of Mr. George Fitzmaurice and Mr. Gilbert A. Peck, two of the witnesses examined in behalf of the defendants in this case, so that you understand the facts therein as narrated?

A. I have.

Q. 6. Have you also read, at my suggestion, the deposition given in behalf of complainants by Mr. Joel C. Rockwell, or a substantial portion of the same?

A. I have read most of it; the balance of it was read to me from the short-hand notes this morning.

Q. 7. Were you present during most of the time at the experiments made by Mr. Rockwell, as narrated in his deposition, and did you take part in any portion of the same or keep substantial track of the experiments as a whole?

(Objected to as immaterial, irrelevant, incompetent, and not in rebuttal; this objection to apply to all questions and answers that may be asked or given relating to said Rockwell experiments or any other, without taking the trouble to repeat the objection from time to time.)

A. I was present nearly all the time those experiments were being made; kept notes of what I saw or what was done during my presence.

Q. 8. Did you or your company furnish the material, surroundings, and equipments to Mr. Rockwell to make these experiments?

A. We did.

Q. 9. In what story of the building was the partitioned room, described by Mr. Rockwell, in which the seeders were placed contain-

ing the stock from which the experiments were made and where the seeding took place?

461 A. The second story; third, counting the basement.

Q. 10. What particular part of the experiments described by Mr. Rockwell, as made by him between the 21st and 25th inst., were you personally familiar with in all the details and of which you took notes, as previously stated?

A. With the settling and drawing of the stock of the first test of the 22d, placing the same in partitioned room; with the melting, settling, and drawing of second test of same date and placing that in the partitioned room, with occasional observations as to the condition of the stock while in the room; putting of it in the tin boxes, surrounding with ice, and pressing the next day; both tests.

Q. 11. Mr. Davis, will you please now, without detailed interrogatories, begin at the beginning, as specified in your last answer, and give the exact procedure followed by Mr. Rockwell in your presence in carrying out the two tests identified by you in your last answer, so far as you have accurate, personal knowledge of the same, paying particular attention to time, dates, and temperature, respectively, of each step?

A. As stated before, the melting of the first test I did not witness. The melted stock was drawn into the settling kettle 12.40 p. m., 22d of September; temperature, 120° F. At 2.40 p. m., same date, it was drawn into the seeder from the settling-kettle, temperature of 120° F., and immediately put into the room provided for that special purpose, the temperature of which was 80°. It was kept there at or very near that temperature until 10 p. m. of the 24th. When I say at or very near that temperature I mean that I observed the temperature frequently during that period and found it varying but slightly from 80° to 81°. At 10 p. m. of the 24th Mr. Rockwell had ninety-one pounds of this stock taken from the seeder, placed in a tin box, twenty inches by fourteen inches by twelve inches, provided with a tight-fitting tin cover. This tin box, containing the stock, was placed in an empty seeder in the same room and completely surrounded with broken ice, and also covered to the depth of a couple of inches, or three, with ice. There it remained until about 10 o'clock of the morning of the 25th, when the seeder containing the box in the ice was taken to the

462 press-room on the floor below, the temperature of which was 81°. At 11 o'clock, after all preparations had been made, the box was removed from the cooler, lid taken off, and the chilled stock taken from it and put on the table for the purpose of cutting into cakes. At that time Mr. Rockwell noted the temperature of this chilled stock, found it to be 67° surface; then cut into three equal blocks, and the temperature of the central portion of the central piece was found to be 96°. Each of the three pieces in which the block was divided was further separated into cakes about twelve inches by one by seven, placed in clean, newly washed cloths, perfectly dry, and put in press, between plates that had been heated to a temperature of 100° by hot water. These plates were not removed from this water, which was exactly 100°, only as they were wanted,

each being put into press as quickly as it could be dried. At 11.42 a. m., same date, the pressing began. The first oil flowed from the pan at 12.04 p. m. At 12.07 p. m. I noticed that the first press cloth bursted. I tested with my finger the lift of the press, and found that it sagged a little after each stroke of the pump. The engine was immediately slowed to forty revolutions per minute from ninety, as tested by myself. The pressing was finished at 2.47. In the interval between the bursting of the first cloth and the completion of the pressing the engine was stopped for periods of probably two minutes, and about five or six times, in order to prevent further bursting of cloths, but the pressure was maintained and the engine further slowed to about twenty-five or thirty revolutions per minute, the number depending on whether the press was working or stopped for a short period, as above described. At the completion of the pressing the plates were lifted, the cloths, with what they contained removed, the oil having been previously caught, result being we had thirty-one and three-quarter pounds of oil, four pounds of stock that escaped from the bursting of the cloths, fifty-three and three-quarter pounds of stearine. The oil contained considerable stearine. In making this answer I have understood that I was answering in question to the first test only.

463 The second test was as follows: Hashing was commenced under Mr. Rockwell's direction at 3.40 p. m., September 22, 1885; finished 4.20 p. m., same date; temperature 118°; stock was drawn from melting kettle to settling kettle 5.30 p. m.; 120° temperature. The drawing of the stock from the settling kettle to the seeder I did not witness, but at 6.30 p. m., one hour after the stock had come down to the settling kettle, I tested the temperature and found it to be between 119° and 120°. I noticed the stock in the seeder as it stood in the room (to which reference has been made) a number of times during September 24th and found it to be quite chilled and hard, smooth on top, temperature of the room being 80° to 81°. Ten p. m. on the 24th Mr. Rockwell had ninety-one pounds of this stock referred to as test No. 2 taken from the seeder after thoroughly mixing and placed in a tin box twenty inches by fourteen by twelve, provided with a tight-fitting tin cover, and placed in the same seeder that contained the box belonging to test No. 1, and thoroughly surrounded with broken ice, also covered to the depth of several inches. About ten o'clock of the morning of the 25th this seeder containing the two boxes and ice was removed to the press-room on the floor below. The box was taken from the cooler and ice about one o'clock, cut into cakes about twelve inches by one by seven, wrapped in clean dry press cloths, and put into press between plates heated by water the temperature of 120°. Pressure was applied at 2.05 p. m., the engine then running about thirty revolutions a minute. First, oil flowed from the press 2.30 p. m.; at 5.05 p. m. pressing was completed, result being forty-four pounds of oil, forty-five and one-half pounds of stearine, with stearine very plainly noticeable in the oil to the taste. No bursting of bags in this test.

Q. 12. How were the press cloths which incase the chilled stock in both tests as to newness and strength and fitness for that purpose?

A. They were the best we had. They were bought new about two weeks before.

Q. 13. What mechanical device did you use, if any, in connection with the pressing of this chilled stock, to make it certain that you secured all the oil extracted by the pressing?

464 A. We had a tin pan made to fit in the press, provided with a spout and flaring sides about five inches high, so that all the oil that escaped from the cloths in pressing had to pass through this spout into this vessel provided for catching it.

Q. 14. What is the capacity of the presses used by you in these two experiments in extracting and separating the oil and stearine?

A. They are each 400 tons.

Q. 15. Was this full pressing power used in each experiment?

A. It was.

Q. 16. What is the ordinary revolution used by you in exerting this pressure usually on your oleomargarine stock?

A. Usually we run on our engine ninety revolutions per minute.

Q. 17. Does the slowing down of the engine to twenty-five revolutions per minute decrease the pressure force or simply regulate its speed?

A. The slowing the engine does not decrease the force a particle. It only lessens the rapidity with which it is applied.

Q. 18. You have spoken of holding the press some two minutes at a time four or five points in the pressing. Does this mean that the pressure was withdrawn or held without advancing?

A. It means that the application of the pressure was stopped, but that whatever the press had at that time was maintained.

Q. 19. What quality of fat did you use, of which the stock was obtained, to make these two experiments?

A. Such fat as we make our regular No. 1 oil of daily.

Q. 20. Is it possible to seed or granulate oleomargarine stock at a temperature no higher than eighty degrees, so as afterwards to obtain from it any practical or marketable or salable quality or quantity of oleomargarine oil?

A. I do not believe it is. I have never been able to do it myself.

465 Q. 21. Is it possible to permit oleomargarine stock to become so thoroughly chilled that you can cut it into cakes an inch thick and then separate the oil from the stearine by pressing by means of hot plates so as to obtain a practical and salable quantity or quality of oil?

A. I do not believe it can be done.

Q. 22. How many windows were there on the east side of that partitioned room?

A. Two.

Q. 23. In the manufacture of oleomargarine stock, when the stock chills at a temperature of 80° what is then done with it?

A. If the temperature has fallen to 80° and remained at that several hours it prevents all crystallization of the stearine, rendering

successful pressing an impossibility and necessitating a remelting of the stock in order to have it properly seeded.

Q. 24. What was the exact size and thickness of the plates used in the two experiments on the chilled stock?

A. They were forty-eight inches by thirty by three-sixteenths.

Q. 25. Was the so-called oil which you obtained in both experiments, with its intermingled stearine, a merchantable quality of oil?

A. It was not.

Q. 26. How long would it take, even in the presses used by you, to extract what oil could be got out of chilled product, as you have described, provided the press was filled with such product in the usual way?

(Further objected to because the witness has not shown to possess knowledge on that subject.)

A. It could never be done.

Q. 27. What is the pressing capacity in pounds of stock in your presses?

A. We fill them with 2,500 to 2,600 pounds.

Q. 28. What was the size of the two seeders in which the stock was placed for this experiment September 22d?

A. Five feet by three feet by twenty inches.

Q. 29. How much stock was put in each of them?

A. The stock was not weighed. They were filled to the usual depth—that is, as full as it is safe to have them in running
466 them from the settling kettle to prevent spilling. I should judge about six to seven inches from the top.

Q. 30. Was the stock, after it went into these two seeders on the 22d and into the seeding-room, disturbed in any manner so as to prevent its seeding, or anything added to it or taken away during that time or until it was taken out to put into the ice pans?

A. It was not disturbed in any way nor was anything taken from it or added to it at any time.

Q. 31. Was any ice put on the pans after the first was put in?

A. I understand that you refer to the pans containing the chilled stock. My answer is no.

Q. 32. Was any water permitted to remain in the bottom of these seeders when the stock was put in?

A. Not a particle.

Q. 33. Why not, and what effect does any quantity of water have upon stock if it should remain in the seeding vessel while seeding?

A. It sours it—produces what we call sour bottoms.

Q. 34. Does the purity or cleanliness of the water prevent the souring or spoiling of the stock?

(Objected to further unless the witness places his answer upon personal knowledge.)

A. The cleaner the water is the less tendency there is to produce sour bottoms, but the purest water will sour stock in time.

Q. 35. What effect will pure water have upon pure oleomargarine oil?

(Same objection; the complainant seems to be attempting to reopen his whole case.)

A. From my own personal knowledge it will sour it.

Recess until 1.15.

Cross-examination by L. HILL, Esq.:

(Defendant's counsel, without waiving the objections hereinabove noted, proceeds to cross-examine *de bene esse*.)

C. Q. 1. You have stated that in your first experiment the
467 pressing began at 11.42 a. m. and ended at 2.47 p. m., while in your second experiment the pressing began at 2.05 p. m. and ended at 5.05 p. m. Am I correct?

A. Yes, sir. In the second instance the press commenced to lift at 2.05. The first application of the pressure was made.

C. Q. 2. The stock was in the press, then, about three hours in each instance?

A. Three hours and five minutes.

C. Q. 3. In the press that you used in those experiments how far would the ram and plates rise per minute with the engine running at thirty revolutions per minute?

A. It would depend on whether the large pump, small pump, or both were used. The large pump was used only to lift the press until the blocks on topmost plate reached the cap. Then the large pump is shut off and the small one continues the pressure. Just how far the small pump would lift at thirty revolutions per minute of the engine would depend on the resistance offered by the stock itself. When stock is hard, as both of these experiments showed the stock to be, the resistance is almost instantaneous with the block reaching the cap—that is, soft stock offers little or no resistance for some minutes except its own weight, but hard stock will offer almost as much at first as later on.

C. Q. 4. What pump did you use in those experiments?

A. Small pump. The large pump was used to lift the press simply; the small pump to do the pressing.

C. Q. 5. You say the press was registered at 400 tons. Do you mean 400 tons the entire pressure or 400 tons square inch?

A. 400 tons entire pressure.

C. Q. 6. How many cloths did you use in each of those experiments? What was their size?

A. Thirty-six in each experiment; size, twenty-eight inches by twenty-one.

C. Q. 7. Did you ascertain how much oil was taken up in those cloths?

A. Yes.

C. Q. 8. How?

A. We took the cakes from the press in each instance,
468 weighed them; stripped the stearine—weighed that; weighed the dry cloths; weighed the saturated ones; credited the difference between the dry and saturated ones in weight as oil.

C. Q. 9. How do you account for it that you got out of ninety-one pounds stock fifty-one and three-fourths pounds oil in the first test and forty-four pounds of oil in the second; what made this remarkable difference?

A. I attributed the difference solely in temperature of the plates used, which was 20°.

C. Q. 10. Did you regard the stock as substantially the same in both experiments—I mean the chilled stock that went into the press?

A. I did, and the temperature tests which were made of it previously to putting it into press showed that both were of the same temperature both outside and inside.

C. Q. 11. Did you take the temperature of the stock in the seeder at the time when you took some of it out to put into the pans or boxes?

A. I did.

C. Q. 12. What was it at that time?

A. From 96° to 100°.

C. Q. 13. What do you mean by from 96° to 100°?

A. I mean that no cooler or seeder showed less temperature than the other, due to the fact, probably, that one was drawn sooner than the other, but both were 80° on top. This 96° and 100° was the temperature down underneath that top crust.

C. Q. 14. Do you mean that one was 96° down underneath the crust and the other 100° down underneath the crust?

A. Yes, sir. My impression is that the one seeder showing 100° was probably—I should think it had probably two inches more stock in it than the other. I just think so.

C. Q. 15. But after the stock was chilled you found the temperature of both blocks to be 67° on the outside and 96° inside?

A. Yes, sir. You will understand that the stock which I supposed had two inches more or at least, at all events, the one that had
100° temperature remained in that seeder with the ice about
469 an hour and a half or two hours longer than the other one. We did not take it out of the ice until we were ready to operate with it.

C. Q. 16. What was your object in making those two tests?

A. The object was solely to see what results might be obtained by the method pursued.

C. Q. 17. You knew that it was in evidence in this case that a test at the works of the defendant in June last had resulted in producing about sixty per cent. of good oleomargarine oil from pressing ninety-one pounds of chilled stock, did you not?

A. It is so alleged.

C. Q. 18. And you expected to get a different result, did you not?

A. I did, and I knew it under the conditions named.

C. Q. 19. When you took the ninety-one pounds of stock out of

the seeders to put into the chilling pans or boxes for the purpose of the experiments the stock in the seeders had not seeded or crystallized, had it?

A. Not a particle.

C. Q. 20. And you knew that stock which had simply chilled but not seeded or crystallized could not be pressed in a press so as to produce therefrom about 60 per cent. of first-class oleomargarine oil, did you not?

A. I knew that stock, as you say, that was simply chilled was never crystallized afterwards, and without crystallization you cannot get perfect pressing results. It is utterly impossible.

C. Q. 21. Please hear my last question read again and give a more direct answer.

A. Yes.

C. Q. 22. Then when you took that stock—I mean that ninety-one pounds in each instance—from the seeders and put it into the chilling pans or boxes you knew that you could not get by pressure good oleomargarine oil properly free from stearine out of the chilled contents of the two pans or boxes, did you not?

A. Yes; I was satisfied of it.

C. Q. 23. So that the fact is that you treated the fat or stock or melting or settling or so-called seeding from the beginning of the operation up to the taking of the ninety-one pounds of stock
470 out of the seeders in such a way as to prevent the possible obtaining of good oleomargarine oil from it by pressure, or of the proper percentage of oil from it by pressure; and when you took out the ninety-one pounds and put it in the pans you knew that you had got it into such a condition that no pressing could produce good oil from it, or the proper percentage from it; and the whole subsequent proceeding of pressing, etc., was a mere farce? Was that not a fact?

(Objected to by complainants' counsel for the reason that the witness has stated that he made these experiments following the alleged experiments of the defendant's witness and for the purpose of ascertaining whether, by any possibility, the experiments testified to by the witnesses Fitzmaurice and Peck could be true or the results therein narrated could be obtained.)

A. No; the whole proceeding from the melting, settling, drawing of the stock, putting it in a room at 80°, keeping it there for a specified time, taking ninety-one pounds and chilling it, cutting it into cakes, pressing it, was all done with the most careful effort to follow the course and outline by the other side to satisfy ourselves whether what they claimed to have done and the results that they claimed to have obtained could possibly be had. At no time did we deviate a particle from what we believed was the course pursued by them.

C. Q. 24. But you knew that the stock which they took out of their seeder and put into the chilling pans or boxes for the purposes of their experiment was said by them to have been properly grained or crystallized, did you not?

A. We knew it was said to be properly grained or crystallized, but we also knew that at 80° stock won't crystallize.

C. Q. 25. What did you do with the stock in your two experimental seeders that was not taken out and put into the pans to chill?

A. It was set aside to be remelted, which has since been done.

C. Q. 26. Why did you not run it off to the presses with your other stock, without remelting it?

471 A. For the reason, as we have stated before, there was no crystallization in either seeder; part of it, the top, being hard and stiff, the lower portion of it—probably the lower three-fourths of it—soft and mushy, but entirely without grain.

C. Q. 27. What did you do with the oil which you pressed out of those two blocks of solidified stock, which had been chilled by ice, as you have testified?

A. It was put with the scrapings and bottoms in the seeders for remelting. What I mean by scrapings and bottoms is that there is a portion of the stock on the bottom of some seeders slightly discolored, which we rehandle for the purpose of cleansing and reseeding.

C. Q. 28. Why didn't you run that oil into your other oils for the market without remelting it?

A. Didn't think it was sufficiently prime to do so, owing to the stearine contained.

C. Q. 29. You knew that in the defendant's experiment of June last the seeded stock in the experimental seeder, so far as it was not used in the chilling pans or boxes, was testified to have been taken to the presses and pressed for the market in the regular course of their business, and that the oil obtained from pressing the chilled stock in the chilling pans or boxes was testified to have been prime oil and to have been run into the tierces with their first-class oil, did you not?

A. My recollection was and is now that the testimony you refer to stated that the portion of the stock in the seeder not used for chilling was divided up among their seeders of stock which had been seeded at a higher temperature, and that the oil was, as you say, put in with their other prime oil; what they call No. 1 oil, I believe.

C. Q. 30. Didn't you read in the defendant's evidence that the stock in their experimental seeder for the experiment of June last was seeded in the same room where their other seeders were situated and where their seeding was carried on, in the ordinary course of their business, and at the same temperature?

A. I wish to correct my previous answer and substitute for "seeded at a higher temperature" drawn from the settling kettles. I did understand that the experimental seeder was kept in the same room with the balance of the stock in the seeders, in the regular course of their business.

472 C. Q. 31. Didn't you know that they keep their seeding-room in the regular course of their business at about the same

temperature as you keep your seeding-room in the regular course of your business?

A. I did not. I have no means of knowing what temperature they keep their seeding-room at. I only infer that they would want to keep it from 86° to 92°, depending on the time which they wished to press their stock. We keep ours at 86°; as near it as we can.

C. Q. 32. Do you seed your stock in your press-room?

A. We do not.

C. Q. 33. You know that the defendants' No. 1 oleomargarine oil is a first-rate oil and stands high in the market, do you not?

A. I never have seen any. What I know of it is merely hearsay, but that has been favorable as to its quality.

C. Q. 34. And to produce oil of such quality you know that the seeding must be done at the temperature about the same as you employ in your works, would you not?

A. I should believe so.

C. Q. 35. When you read in the defendant's evidence concerning their experiment of June last, that their stock had been seeded in the same room with the other stock in the regular course of their business and at the same temperature, and that at the time of taking out the 91 pounds into the chilling pans or boxes the seeding or crystallization was perfectly accomplished, why did you go to work to partition off a small room by itself for seeding purposes to reduce the temperature in that room below the temperature employed for the regular course of your business for seeding, and to press a stock which you knew was not seeded or crystallized in the slightest degree? Did you think that such an experiment as that was any answer to the experiment made by the defendants in June last?

A. I shall divide my answer severally. First, I will say that I did not believe the stock was drawn at 120°, or that if so it was seeded at 80°, and I don't now, and I haven't the slightest idea that it can be done. In the next place, you allege that the stock
473 was crystallized. That cannot be done at the temperature at which the stock was drawn and which they testified it was seeded. I did not believe then it was crystallized; I don't now. The next place, our object for partitioning off a room was, as we stated before, to get the temperature exactly 80°, or as little varying from it as possible. This we could not do in our other room without destroying the granulation or seeding or crystallization of the other stock there placed. As I have already stated, our regular stock-room is kept at 86°, varying very little from it, and so far as our test or several of them being a perfect answer to defendant's testimony, I certainly believe they are. I think it is a complete answer in that it didn't vary one hair from the process pursued by the defendants. In the second experiment the only variation from their alleged process was in the pressing with plates at 120° temperature instead of 100°. I would like to add that another object in partitioning that room, providing it with a lock and key, was to absolutely prevent any meddling with the stock on the part of any one not connected with the experiment.

C. Q. 36. What pressure do you ordinarily use in pressing your oleomargarine stock in the regular course of your business?

A. Our pressure is four hundred tons—that is, the safety-valve weight is set to give us that if we need it; but stock that is in the proper condition does not need it, so that we probably use anywhere from two hundred to four hundred tons. If the stock is properly seeded and the press is run at the proper speed we won't get out stearine with our oil any more readily with the safety-valve set for four hundred tons than for two hundred tons, for the reason that the cakes of stock in the press in the first half to three-quarters of an hour take their shape or, as we may call it, are set. The oil escapes from the cloths freely, leaving the stearine behind. Should the four hundred tons pressure be reached as the press is nearly run out it would only result in lifting the safety-valve.

C. Q. 37. My question was, in substance, what is the average pressure that you apply in pressing your well-seeded stock to produce oleomargarine oil for the market?

A. That is a question that is very hard to answer, for this
474 reason: As long as there is oil in the cakes in the press coming from stock which has been properly seeded and pressure is applied the oil will escape. It commences to escape without any pressure. It increases as the press runs up until the maximum is reached in probably an hour after the press is started, and then it begins to decrease, and when the oil is all run out we have reached our four hundred tons pressure and the safety-valve lifts. Should our engine run along and the foreman pay no attention to it, the press will not burst, but he will not get any more oil. The consequence is that it (the pressure) begins at nothing, and when the press is run out will have reached four hundred tons. The four hundred tons pressure lifts the valve at every stroke of the pump.

C. Q. 38. You mean that about an hour after the pressing begins the maximum flow of oil is reached and is not the maximum pressure, do you?

A. That is right.

Redirect examination by C. K. OFFIELD, Esq.:

R. Q. 1. Is Mr. Rockwell, who conducted these two experiments, connected with your company or interested with you, your company, or any of its officers in any manner, directly or indirectly?

(Objected to as new matter not referred to in cross-examination.)

A. He is not.

R. Q. 2. Was there any other object or intention in conducting these experiments as detailed by you except to ascertain whether or not the alleged statements as to the experiments professed to have been carried on by these defendants could possibly be true as stated?

A. There was not.

R. Q. 3. You have been interrogated in detail concerning the crystallization which occurred in those two seeders placed in that uniform temperature of 80° and you have stated that there was no

crystallization. Did you investigate to ascertain whether or not any crystallization had taken place except such investigation as you could make with your eye or hands?

A. I did not; no other is necessary. If there is crystallization it is plain to be seen.

J. M. DAVIS.

475 STATE OF ILLINOIS, } ss:
County of Cook, }

I, Frederick C. Goodwin, a notary public in and for the county of Cook, in the State aforesaid, do hereby certify that the foregoing depositions of J. C. Rockwell and James M. Davis were taken before me at the time and place therein specified, pursuant to notice hereto attached, by consent of counsel made part of this record; that the parties to the said cause were present at the taking of the same, complainants by their counsel, C. K. Offield, Esq., and defendant by its counsel, L. Hill, Esq., as therein appears; that before deposing the said J. C. Rockwell and James M. Davis were each by me first duly sworn to tell the truth, the whole truth, and nothing but the truth in the cause now pending in the United States circuit court for the northern district of Illinois, wherein the Commercial Manufacturing Company, Consolidated, *et al.* are complainants and Fairbank Canning Company is defendant; that said depositions were reduced to writing from said witnesses' statements and the same duly subscribed and sworn to by each of them as therein appears.

And I do further certify that I am neither attorney nor of counsel for any of the parties in said deposition or caption named, and am in no wise interested in the result of said cause.

In testimony whereof I have hereunto set my hand and notarial seal this 28th day of September, A. D. 1885.

[SEAL.] FREDERICK C. GOODWIN,
Notary Public.

476 United States Circuit Court, Northern District of Illinois,

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Equity.

At the city of New Haven, county of New Haven, State of Connecticut, at my office, room 22, White's building, in said city, on this 5th day of October, A. D. 1885, before me, Charles Kleiner, a notary public for the said county of New Haven, duly authorized, etc., personally appeared Charles K. Offield, in behalf of complainants, and Judge Lysander Hill, in behalf of defendants; and thereupon the following proceedings were had:

Complainants' counsel called as a witness in their behalf NATHAN EASTERBROOK, Jr., who, first being duly sworn to state the truth,

the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories propounded by said C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. Nathan Easterbrook, Jr.; age, forty-nine; residence, New Haven, Connecticut; manufacturer of oleomargarine.

Q. 2. For how long a time have you been engaged in the manufacture of oleomargarine at the city of New Haven?

A. Over eleven years.

Q. 3. I do not wish to inquire into the details or particular extent of your business, but if there is no objection please state whether your manufacture of oleomargarine has been continuous during the last eleven years, and whether or not such manufacture has been extensive or restricted in its production.

A. I would like to correct the previous answer. During
477 the eleven years previously referred to as indicating the time I have been in the business in New Haven there should be deducted one year and a half which I spent in New York—in the Commercial Manufacturing Company of New York—during which time the factory in New Haven was in operation partially under my supervision at that distance. The factory in New Haven was in operation during those eleven years almost continuously. The extent of the manufacture of oleomargarine in my factory has been of considerable magnitude.

Q. 4. State whether or not and to what extent, if at all, you have had personal supervision and knowledge of the oleomargarine produced at your factory during the last eleven years, and give the extent of your personal supervision and knowledge of its production during that time.

A. I have had personal supervision and thorough and complete knowledge of the detail of the manufacture and product during all that time, except the year and a half previously referred to.

Q. 5. During your manufacture of oleomargarine during the last eleven years state whether or not you have conducted said manufacture as a licensee under any letters patent and invention; and, if so, state what patent.

A. The manufacture of oleomargarine was conducted here as a licensee under the Mége patent and process.

Q. 6. Is that the patent now owned by the present corporation complainant, The Commercial Manufacturing Company, Consolidated, and its predecessors, being the patent sued on in this case?

A. I so understand it.

Q. 7. Have you read the depositions given in this case in behalf of the defendant by Mr. Gilbert A. Peck and Mr. George Fitzmaurice, setting forth certain alleged experiments on their part in the production of oleomargarine from beef fat?

A. I have.

Q. 8. Have you attempted faithfully and earnestly to follow and duplicate such experiments for the purpose of ascertaining if by any possibility the alleged results professed to have been obtained

by such experiments could possibly be obtained when followed, as alleged, in the deposition referred to?

478 (Objected to as calling for matter not in rebuttal, and also as leading, calling for an opinion, irrelevant, immaterial, and otherwise incompetent; and notice is given that this objection will be considered as applying to all questions to be propounded and answers given during the course of this deposition relative to any alleged experiment or experiments made by this witness or witnessed by him, without any special repetition of the objection in each instance.)

A. I have followed the experiment as indicated in the depositions of Mr. Peck and Mr. Fitzmaurice faithfully, earnestly, and honestly.

Q. 9. At what place did you duplicate these Peck and Fitzmaurice experiments?

A. At my factory, 135, 137, and 139 Park street, New Haven, Connecticut.

Q. 10. Who and who only had access to your factory and personal knowledge of your experiments during the time they were conducted?

A. The experiments were conducted by Henry M. Sykes, with a helper, under my directions, no other persons having access to the rooms in which the experiment was conducted.

Q. 11. Was any other business carried on in your factory or oleomargarine manufactured or handled in any shape during the time you made these experiments, except the particular product which you handled in conducting them?

A. No other business connected with the manufacture of oleomargarine was done during this time and no other fat received, except that from which this product was obtained.

Q. 12. Will you please now, without detailed and itemized questioning, begin at the beginning and state particularly and exactly each step that you took and the result following therefrom in the experiments which you made under the professed statements of facts appearing in the depositions of said Peck and Fitzmaurice, using any memorandums which you made for additional certainty in the matter, if you so desire, giving accurate dates in each instance in connection with such experiments?

479 A. On Monday, September 28th, between 5 and 5.30 that afternoon, I got from the slaughter-house 587 pounds of warm caul fat, which was brought to my factory, cut up, and put into a box containing 250 to 300 pounds of broken ice, thoroughly washed and chilled, the animal heat being all taken from it. It was left in the ice over night and again washed with clean water in the morning and at 8.40 on the morning of the 29th was sent up to the hasher and hashed. The hashing was finished at 9.30 the morning of the 29th. The rendering was conducted by Mr. Sykes, with occasional visits from myself to witness the work, until at the finish the temperature of 120° Fahr. had been reached at 10.50 a. m. It was then drawn into the settling kettles after properly settling, and kept at 120° Fahr. until 1.10 p. m. of that day, and it was then drawn from the

settling kettle into the seeding-box, temperature still remaining at 120° Fahr. The seeding-box containing this stock was then put into the stock-room, with directions from me to have that room kept at a temperature of 80° Fahr. I saw the stock in this seeder occasionally from that time until eight o'clock that evening, and notwithstanding all the precaution which it was possible for us to take to keep the temperature of the room down from the situation of the stock-room on the south side of the building and from the fact of its being a warm day the room at nc time up to eight o'clock p. m. of that day (the 29th) was less than 86° Fahr. The steam was shut off, but the leakage of the steam through the cocks, together with the sun, prevented our obtaining a lower temperature. The stock was kept in this room, and Mr. Sykes slept in the factory, paying hourly visits day and night for the purpose of taking the temperature of the room and observing the condition and action of the stock, with occasional visits during the time between eight o'clock in the morning and eight in the evening by myself to observe the temperature and condition of the stock. Thursday, October 1st, at 4.30 p. m. I directed Mr. Sykes to take from this seeder 182 pounds of the stock, after having thoroughly mixed the same, so that the top, bottom, and sides should be thoroughly incorporated with the center of the stock in the seeder. That 182 pounds of stock was then divided into equal portions of ninety-one pounds each, and each
480 of the portions put into tin pans made especially for the purpose, and these pans were sent into an empty seeder and surrounded on the sides and between the pans with 290 lbs. of broken ice, the ice covering to within one-eighth of an inch of the top of the pans. The dimensions of the seeding box were three feet eight inches long, two feet ten inches wide, two feet two inches deep, inside measurement; the dimensions of the tin pans in which the stock was put were twenty inches long, twelve inches wide, and fourteen inches deep. The pans flared one inch at the bottom; they were nineteen inches by eleven inches, so as to admit of turning the cake out readily upon the table. There was no more ice added after having surrounded the pans with the 290 lbs. of ice, as previously stated. On Friday morning, October 2d, the ice had settled down, I should say, five inches from the top of the pans. It remained in the same seeder until Saturday morning, October 3d, at 11.03, at which time it was taken out and cut into slices about ten inches by five and one-half inches by one inch thick. The press plates, which had previously been thoroughly washed and cleansed, were then put into water 120° Fahr. The cakes of stock were wrapped in new duck cloth, such as is used in all our pressing, and put into the press, the plates being taken from the water in which they were submerged as fast as the layers of stock were placed in the press and as fast as the wiping perfectly dry of the plates would admit. The press was then started down. At 11.30 I observed the temperature of the room to be 82° Fahr. The press was run at the speed which we ordinarily employ in running our presses, and we stopped at various stages of the pressing, for from five to ten minutes at a time, that the stock might receive the full benefit of the drip in these in-

tervals. At 12.30 same day four of the plates showed stearine at a pressure of 125 tons; at 12.57 we had reached the full capacity of our presses, which is 150 tons. The presses used by us are the "Boomer" press, or Boomer and Boschert, usually known as the Boomer press. The press was allowed to stand and drip from that time until 2 p. m. that afternoon, when it was taken up. We found we had twenty-one pounds of oil, fifty-five and one-half pounds of stearine, and four pounds of stock that had not been pressed
481 for want of room, or because not practicable on account of bending plates. This press and the facts as stated is designated as press No. 1.

The next experiment, which I designate as press No. 2, was identical with press No. 1, except that the stock in pan was allowed to remain in the ice until two o'clock October 3d, when it was taken off the ice and cut into slices of same dimensions as in the previous instance. The plates were put into water heated to 100° Fahr. at 4.25 p. m. October 3d. At 4.32 the first plate was taken out of the water in which the plates were submerged at 100° Fahr. and the press filled as fast as the wiping of the plates would admit. These cakes had been wrapped in cloths that had been used in the previous pressing, which was the second time they had ever been used. The temperature of the room at 4.32 was 83° Fahr. The press was commenced to run down at 4.32 and the first oil appeared at 4.57, and the pressure was continued until 5.10, at which time the maximum pressure of 150 tons had been reached. The press was then allowed to stand until the room could be heated to 90° Fahr., and in so doing steam was let into the pipes, which were within a foot of the back of the press, and in heating the room to 90° we heated the space between the pipes and the back of the press to 102° Fahr. The press was then started down again, and at 5.45 the maximum pressure was put upon the material in the press, with the temperature of the room at from 90° to 93° and the temperature of the space between the press and the pipes at 102° Fahr. The press dripped from 5.45 to 6.45 p. m., under a 150-tons pressure. At 6.55 the press was taken up and the oil and stearine and stock weighed, resulting or getting twenty-three pounds of oil, sixty-one pounds of stearine, five and a half pounds of stock not pressed, because not practicable on account of bending plates.

Q. 13. What kind of fat was this caul fat?

A. Beef fat.

Q. 14. In both of these experiments, press No. 1 and No. 2, did you examine the oil both by taste and smell, so that you fully understood its character and composition after it dripped or oozed from the press in the different stages?

482 A. I did.

Q. 15. Will you state whether or not any of the oil which you obtained in either experiment press No. 1 and No. 2 was a practical and successful oleomargarine oil for food purposes?

A. Neither of the products of the stock pressed in either of those experiments were successful or prime articles of oleomargarine oil, not such as I would buy for making into oleomargarine butter.

Q. 16. What was the matter with the oil, that condemned it for such purpose?

A. The oil was full of stearine, which was perceptible to the eye and to the taste, particularly in the first experiment, press No. 1.

Q. 17. Did any of the bags rupture or burst in either experiment under pressure?

A. They did not, though there was an escape of the stearine from between the folds of the cloth, which in quantity I should say was not over four ounces; this was what I meant in my long answer when I said stearine appeared on the plates.

Q. 18. Is it practical or possible, no matter in what way oleomargarine stock is seeded, to separate the oil and stearine by pressure between hot or warm plates, the stock being in a chilled condition, as you have described, so as to produce a practical and successful article of oleomargarine for food purposes?

A. It certainly is not practicable, and, from my experience and knowledge, not possible.

Q. 19. Was any other oleomargarine stock, except such as you have described, in either press during the two operations?

A. There was none.

Q. 20. What power produced this pressure in the press?

A. Steam power.

Q. 21. Were they the usual presses used by you in your business?

A. It was the press used by us for five or six years.

Recess until 2 p. m.

Q. 22. What is the number or manufactures of this press?

483 A. There is no number on the press to indicate its size, but it is manufactured by the Boomer & Boschert Press Company, Syracuse, New York, patent November 1, 1870.

Q. 23. For the past eleven years at what temperature have you found it necessary to seed or granulate your oleomargarine stock for pressing?

A. At from 86° to 88° Fahr. has been the temperature of our seeding-rooms.

Q. 24. Is it practicable to produce oleomargarine oil from stock seeded below 86°, say 80°, and get a successful and merchantable quality of oleomargarine oil therefrom for food purposes?

A. I consider it impracticable to produce a prime merchantable article of oleomargarine oil from stock seeded at 80° Fahr.

Q. 25. What is done with oleomargarine stock in actual practice if the seeding-room should drop to a temperature of 80° and remain there long enough to produce the effect of that degree of temperature on the oleomargarine stock?

A. It is put into the kettles, melted again and seeded at the temperature of 86° to 88° Fahr.

Q. 26. From the time that stock was drawn off from the settling kettles into the seeder until it was chilled, as you have described, cut up into inch-thick pieces and subjected to the press, was anything done to that stock while seeding, either by adding anything to it or taking anything away, or disturbing it in any manner so as to pre-

vent or hinder the obtainment of a pure article of oleomargarine oil, if such could have been obtained by the process described by you?

A. Nothing was added, nothing taken from, no disturbance occurred to prevent the best results possible to be obtained by the process or treatment indicated in my description of the process followed.

Q. 27. What was the temperature of these cakes of chilled stock upon their outside when they were dumped from the ice pan?

A. The external temperature of the cakes was 62° Fahr. I always mean Fahrenheit when I speak of degrees of heat.

484 Q. 28. In both of these two experiments, press No. 1 and 2, had the mingled oil and stearine practically ceased to drip under this pressure of 150 tons before you removed the stock or released the pressure?

A. They had.

Q. 29. I call your attention now to press No. 2, and to that point in the pressing operation immediately prior to the temperature being raised to 90° and above, and ask you whether or not at that time the oil had practically ceased to drip from the plates before you increased the temperature of the room to the higher degree of heat indicated?

A. The press had been started and the pressure gradually raised with intervals of three to ten minutes for dripping until the maximum pressure of one hundred and fifty tons had been put upon the stock in the press, after which the press was allowed to stand under that pressure until the flow of oil was so diminished that the result aimed at practically at that temperature of the room was considered accomplished.

Q. 30. What was the quality of the oil at that point as to any admixture with stearine?

A. The oil from its first appearance had quite an admixture of stearine, much more than common, and was plainly visible to the eye.

Q. 31. About how much oil had you obtained between those warm plates of press No. 2 before you raised the temperature to 90° and above?

A. I observed the quantity of oil with some particularity, and to the best of my judgment think there was about twelve pounds of oil in the pail.

Q. 32. In what story of your building did this seeding and pressing take place?

A. In the second story.

Q. 33. Was the quality of fat used by you in these experiments such as you would have had any trouble to have made a prime quality of oleomargarine oil from in your usual way?

A. The fat was of the finest quality and would have produced the finest quality of oleomargarine oil if treated as we are accustomed to treat our products from the fat.

Q. 34. What was the size and thickness of these warm plates used by you in these experiments?

485 A. The plates were thirty-four by twenty-six inches on the surface; the thickness I did not measure; should say three-sixteenths of an inch.

Cross-examination by Judge HILL:

(Without waiving any of the objections above noted, defendants' counsel proceeds to cross-examine *de bene esse*.)

C. Q. 35. Referring to the stock placed in the seeder on Tuesday, September 29th, and which remained there until Thursday, October 1st, when one hundred and eighty-two pounds of it were taken out and placed in the pans for chilling, you have not informed us whether that stock seeded or not. Will you please do so now?

A. The seeding stock is progressive. The question does not indicate at what point of time between drawing the stock into the seeder from the settling kettle and the finish by pressure is desired.

C. Q. 36. I want to know whether, as the result of that attempted seeding operation, that stock properly seeded or crystallized so as to assume the proper condition for separating the stearine from oleomargarine by pressure in bags.

A. Up to eight o'clock Tuesday night, September 29th, at which hour I saw the stock last on that day, the room being at 86° in which the seeder stood, the usual indications of proper seeding were visible notably by a thin film over the top of the oil; but on the morning of Wednesday, the temperature of the room having been kept at 80° from 10 o'clock the night before, the proper seeding characteristics had disappeared and there was a crust of an inch or more of a hard stock which continued as the time and seeding progressed until taken out and put into the chilling pans.

C. Q. 37. And when the stock was taken out and put into the chilling pans no part of it, so far as you know, had become properly seeded for the purpose of separating the stearine and oil. Is that the fact?

A. That is the fact, according to the process I observed in the treatment of the stock usually treated in our process.

486 C. Q. 38. Did you ever make any experiment in first properly seeding oleomargarine stock, then chilling it into blocks, then cutting it into slices, and then pressing the slices between plates in bags?

A. I never did before these experiments.

C. Q. 39. Then, outside of your general experience in the oleomargarine business, these two experiments, press No. 1 and press No. 2, are the sources of your knowledge as to the behavior of oleomargarine stock when chilled into blocks by ice, cut into slices, and pressed in bags. Am I correct?

A. These two experiments are the source of the only positive knowledge I have of what results may be obtained by such treatment.

C. Q. 40. When you took that stock out of the seeder and put it into the two pans for chilling on Thursday, October 1st, you saw

that it was not in proper condition for separating its oleomargarine oil from its stearine by pressure, did you not?

A. In my judgment, and for the uses to which I put oleomargarine oil, I considered it improperly treated; but the process followed having been outlined by Mr. Peck in his deposition was strictly followed and complied with, so far as was in my power to do so.

C. Q. 41. Seeing that the stock was improperly prepared, you knew beforehand that the pressing operation would not result in a pure No. 1 oil, but would result in an oil containing an undue proportion of stearine, did you not?

A. I didn't believe that it would result in a pure article of oleomargarine oil, but that belief did not act to prevent me from faithfully prosecuting the treatment to the end.

C. Q. 42. And the result, I suppose, corresponded with your expectation?

A. It did, except that we got more oil than I anticipated.

C. Q. 43. What was the condition of that stock when you mixed it up in the seeder on October 1st, preparatory to taking it out into the pans—was it of uniform density throughout or was any part of it liquid; and, if so, what part, and how hard was the hardest of it?

487 A. I can only answer the latter part of the question, as I did not see the stock in the seeder below the surface. Mr. Sykes, under my order, mixed the stock as I have described heretofore. The surface of the stock in the seeder for several inches, I should say four inches, I saw it was dry and devoid of the consistency of stock seeded at a temperature of 86°. The stock when brought down to put in the pans was of a pasty, sticky consistency, indicating to me that the center of the stock in the seeding box had some degree of fluidity or softness.

C. Q. 44. Did you not see Mr. Sykes mix the stock in the seeder?

A. I did not. I was busy at the time breaking the ice into which the pans were to be put.

C. Q. 45. Did you ascertain the temperature of the stock within a few hours before it was taken out of the seeder or at any time afterwards before the ice was put around the pans?

A. I did not by a thermometer, but only by putting my finger in the stock and feeling of it on top a number of times during the seeding process, as I am accustomed to do in my own manner of treating stock.

C. Q. 46. You have described the stock in the seeder as becoming hard and dry on top. Did its top surface resemble caked tallow?

A. No, sir; it did not. It was more mealy to the touch than caked tallow, which is hard and brittle.

C. Q. 47. When the chilled stock was turned out of the pans and cut into slices did you find it of uniform density throughout? If not, describe its condition.

A. The exterior of the cake for about two inches from the bottom and sides was hard, brittle, and flaky, but as the cutting progressed toward the center of the cake there was a perceptible difference in the density or consistency, it being softer than the exterior.

C. Q. 48. How soft was it at the center of the block?

A. I don't know that I can convey accurately the degree of softness by any physical description, but I should think the difference in the degree of heat might be 12° to 15°.

C. Q. 49. How did the interior or central part of the block compare, for example, with rendered lard at a temperature af 70° Fahr.?

488 A. I am not familiar with the consistency of lard at that temperature, but should say that the center of the block was very much more solidified than lard would be at 20° below that.

C. Q. 50. As you cut through the blocks did any liquid oil appear in the interior, or did the surface of the cut throughout appear dry?

A. Not a particle of liquid oil in the block; it was firm and solid.

C. Q. 51. How long was each of those pans of stock in the ice?

A. The pan containing press No. 1 was in the ice about forty-two and one-half hours, to wit, from 4.30 p. m. of October 1st to 11.03 a. m. of October 3d, and the pan containing press No. 2 from 4.30 p. m. October 1st to 2 p. m. October 3d, about forty-five and one-half hours.

C. Q. 52. Was the ice renewed about these pans at any time?

A. No, sir. There was only 290 pounds of ice used during the experiment, and that was all placed there at the beginning.

C. Q. 53. How much of that ice remained at 11 o'clock a. m. of October 3d?

A. There was floating cakes or pieces of ice just about covered the surface of the seeding-box, the balance having melted and formed water that surrounded the pans.

C. Q. 54. State how long each pressing operation continued from its beginning to its end.

A. In press No. 1 two and a half hours, during which time about twenty-five minutes, as near as I can judge, was consumed in running the press down to the blocks. In press No. 2 we occupied two hours and thirteen minutes, from 4.32 to 6.45, and to explain the difference in the time consumed as between the two presses we raised the platen from the first press just enough to free the blocks, and when the power was put on in press No. 2 the pressure commenced when the platen had not run more than two or three minutes.

C. Q. 55. The material was under pressure, then, in the first experiment about two hours and five minutes, and in the second experiment about two hours and ten minutes?

489 A. Yes, sir.

C. Q. 56. I suppose that press was a screw-toggle press run by steam-power, was it?

A. Yes, sir.

C. Q. 57. As the movement of the platen depended on the revolution of the screw, please inform us how long the screw remained still, not rotating, during the two hours and five minutes that the pressure was on in the first experiment, and also during the two hours and ten minutes that the pressure was on in second experiment.

A. The power was stopped by throwing off the belt four times in the first experiment of from five to ten minutes each, and in the

second experiment two stoppages were made beside the long stop that we made when we raised the temperature of the room to 90° and over.

C. Q. 58. That long stop in the second experiment was thirty-five minutes, was it not?

A. I didn't time the stop, for the reason that the point for which the stop was made was to allow the flow of oil from the press with the temperature of the room at 85° and over to diminish to that extent; that that practically ended the experiment at that point.

C. Q. 59. You stated that in the first experiment you reached the full pressure at 12.57, and the press was then allowed to stand and drip from that time until 2 p. m. What did you mean by that?

A. That was to allow the flow of oil to continue as long as it did or would flow at the maximum pressure of the press, as is customary in our daily business of pressing.

C. Q. 60. Do you mean that the screw was stopped turning at 12.57 and remained stopped until 2 p. m.?

A. I do.

C. Q. 61. In the same answer, referring to the second experiment, you state that the press dripped from 5.45 to 6.45 p. m. under 150 tons pressure. Do you mean that the screw was stopped all the time during that hour, from 5.45 to 6.45?

A. I do.

C. Q. 62. Will you please figure out just how long that screw was turning during press No. 1, and also during press No. 2?

490 A. Taking the average time of the whole stoppages to be seven minutes, with stoppage of an hour and three minutes, the screw was turning or rotating about half an hour in press No. 1. In press No. 2 the average time of the two stoppages would be about five minutes, and, as nearly as I can judge, the long stop to raise the temperature of the room, which was done by turning the steam into the pipes and opening the dry-room immediately adjoining, the dry-room being over the boilers and the heat in that dry-room being, I should say, 125° to 130°, I should say we stopped the press for fifteen or possibly twenty minutes until the temperature of the press-room was raised to 90° and above. This time added to the stoppages would leave about half an hour the screw was rotated.

C. Q. 63. Did you ascertain how much oil was absorbed by the cloths in the two experiments, and were the same cloths used in both experiments?

A. Not directly; only by inference the same cloths were used in both experiments.

C. Q. 64. Were the cloths cleaned or washed after the first experiment and before the second?

A. They were not.

C. Q. 65. How long were they emptied of stearine from the first experiment before they were filled with stock for the second?

A. About two hours.

C. Q. 66. Who directed you to make these experiments?

A. Mr. James Wilson, of the Commercial Manufacturing Company, Consolidated, together with Mr. Offield.

C. Q. 67. When and where did they give you the directions to make the experiments or the order or request to make them?

A. Mr. Wilson requested me in New York to make the experiments, stating that Mr. Offield would acquaint me with the process to be obtained in deposition for the defense, or words to that effect. I don't remember the precise phraseology of the request.

C. Q. 68. When was this interview with Mr. Wilson in New York?

A. I haven't any means of stating definitely; should think it was six weeks ago, or about that.

491 C. Q. 69. After that interview with Mr. Wilson did you get instructions from Mr. Offield how to make the experiments?

A. After that interview with Mr. Wilson the next communication I had with him was by mail, enclosing a letter from Mr. Offield to him (Wilson), together with the depositions of Mr. Peck and Mr. Fitzmaurice, informing me that I had been designated to Mr. Offield as the party to make the tests, and that Mr. Offield would communicate with me either by mail or in person.

C. Q. 70. When was that?

A. I should think it was about two weeks ago; am not positive. I did not particularly note the date of the letter, and don't now remember it.

C. Q. 71. When and where did you next see Mr. Offield after that?

A. I saw Mr. Offield last Friday night, he having stopped on his way from New York.

C. Q. 72. When did you next see him after that Friday night?

A. Saw him Saturday afternoon, October 3d; think it was between 4.30 and 5 o'clock.

C. Q. 73. Was that while press No. 2 was going on?

A. That was just after we had got the press in, I believe; think he was there twenty minutes while the test was in process.

C. Q. 74. In the instructions which you received concerning these two experiments was your attention called to the necessity of keeping the temperature of the seeding-room at 80°, and were you instructed so to do?

A. Yes, sir; that being the line of action as indicated in the deposition of Mr. Peck at the factory of the defendants at Chicago, which I was instructed to follow with the greatest care and attention.

C. Q. 75. You understood from the defendants' depositions, did you not, that the stock which Mr. Peck experimented with at Chicago in June, 1885, seeded properly before it was taken out and put into the chilling pans?

A. I understood that such was the alleged condition of the stock from Mr. Peck's deposition.

C. Q. 76. Did you think that in pressing stock that was not
492 seeded at all you reproduced an experiment which consisted in pressing stock that had been perfectly seeded?

(Objected to by complainants' counsel as not containing a correct representation of the supposed facts testified to by defendants' witnesses, such witnesses having asserted the fact to be that the chilled stock which was pressed by them was seeded at a temperature of 80°

to 81°. Defendants' counsel suggests that possibly complainants' counsel was in error in his objection instead of the question being erroneous.)

A. It seems to me that the incongruity of the question admits of only one answer, and that is that a stock that was not seeded at all as compared with a stock that was perfectly seeded would not and could not produce a number one quality of oleomargarine oil. The stock as seeded at 80° was as thoroughly and completely seeded as I can conceive it possible to be seeded at that temperature.

C. Q. 77. Then, if I understand you, you cannot conceive it possible to thoroughly seed oleomargarine stock at 80° or 81°. Is that your meaning?

A. Not when it is taken from the settling kettle at 120°.

C. Q. 78. How, if at all, does the difference of temperature at which fat is melted, rendered, or settled affect the degree of temperature at which it will perfectly seed?

A. If the stock in the settling kettle is heated to a degree considerably in excess of 120° I think it might be seeded more perfectly with the room at a temperature of 80° than a fat taken from the settling kettles at 120°.

Adjourned to Tuesday, October 6, 9.30 a. m.

NEW HAVEN, TUESDAY, *October* 6, 1885—at 9.30 a. m.

Met pursuant to adjournment.

Present: Same as before.

C. Q. 79. It is a known fact, is it not, that, other things being equal, the minimum temperature at which oleomargarine stock will properly seed varies inversely within certain limits with the maximum temperature at which said stock has been melted or settled?

493 A. I can give no positive answer to the question, as my operations have been confined to temperatures within the limits of the Mége patent.

C. Q. 80. Did you ever melt or settle any fat at 103° Fahr.?

A. Don't think I have ever melted fat at 103° Fahr.

C. Q. 81. Did you know that the Mége patent directs that the fat shall be melted at a temperature not exceeding 103° Fahr.?

(Objected to as not containing a correct statement of the Mége patent, such patent also providing for slowly raising the temperature until the matter shall completely separate and not have the taste of fat, but the taste of molten butter.)

(The objection objected to as containing an incorrect statement of the directions given in the Mége patent, which prescribe the temperature both for the melting and settling.)

A. I think the Mége patent says that it may be melted at 103° or above, and it has been my understanding since my connection with the manufacture of oleomargarine under that patent that a discrepancy existed in the wording of the same by a mistranslation from the French.

C. Q. 82. At what temperature have you ordinarily melted your fat in the manufacture of oleomargarine?

A. At from 120° to 128° or 130°.

C. Q. 83. And in melting fat at a temperature ranging from 120° to 130° you considered yourself within the limits allowed by the Mége patent by mentally amending the Mége specification so as to correct the error which you understood to exist therein. Am I right in that?

A. My understanding of the Mége patent is that the fat may be melted at as low a degree as 103°, or at any point above that which will produce an article of stock free from the odor of tallow, but having a flavor similar to that of molten butter.

C. Q. 84. Returning now to the seeding part of the process, you state in your 78th answer your opinion that stock which had been raised to a degree considerably in excess of 120° would seed at a lower temperature than stock which had been raised only to 120°. This answer was based upon the knowledge that within certain limits the higher the temperature at which fat is melted or
494 settled the lower is the temperature at which it is possible to seed or crystallize its stearine. Am I not correct?

A. Having made no practical tests of the difference in the seeding process at a degree considerably in excess of 120°, I cannot state positively and in detail what would be the actual result of so treating stock. The opinion expressed in answer 78 was based upon hearsay.

C. Q. 85. What has been the extent of your manufacture of oleomargarine oil as distinguished from the transformation of oil into butter?

A. I should think the quantity of fat melted or rendered by me for the space of five years past would be on an average of from 250,000 to 300,000 pounds per year.

C. Q. 86. The larger part of your business has been making butter instead of making oil, has it not?

A. Yes, sir.

C. Q. 87. At what hour on Monday evening, September 28th, did you leave the factory to remain away until morning?

A. At eight o'clock.

C. Q. 88. At what hour did you return to the factory on Tuesday morning, September 29th?

A. At about quarter past eight.

C. Q. 89. Were you at the factory Tuesday night? If not, please state at what hour Tuesday evening you left and at what hour Wednesday morning you returned.

A. Left *at* Tuesday evening at eight o'clock and returned about quarter past eight Wednesday morning.

C. Q. 90. Answer the same question as to Wednesday night, Thursday night, and Friday night?

A. I observed the same hours Wednesday night and Thursday morning. Thursday night I did not return to the factory after six p. m. Friday morning I was at the factory about quarter past eight. Friday night left the factory about 10.15 in the evening.

Saturday morning got there about 8.15, that being the usual hour that I get to the factory.

C. Q. 91. Then as to what was done to the stock or omitted to be done to it and as to the temperature surrounding it during Monday night, Tuesday night, Wednesday night, Thursday night, and
495 Friday night, while you were absent from the factory, you have no personal knowledge, but speak only from hearsay. Am I correct?

A. You are correct, except so far as certain personal marks made by me on the surface and about the sides of the stock in the seeding-box. No disturbance of the same could have occurred very well without my being so apprised.

C. Q. 92. You have testified that when you left the factory Monday evening, September 28th, at eight o'clock, the seeding appeared to have progressed normally up to that time, but that when you returned at 8.15 Tuesday morning the seeding appeared to have been interrupted at some time during the interval and to be no longer progressing normally. To what cause did you attribute that change of conditions, and will you please describe the appearance of the stock when you left it Monday evening and its appearance when you returned to it Tuesday morning, so that we can understand the difference in its appearance?

A. The stock Monday evening, having stood in a temperature of 86° from the time it left the settling kettle to eight p. m., had cooled or crystallized so gradually that a thin film formed on top, immediately underneath which was the fluid oil. When the temperature of the room had been reduced at a later hour to 80° the chilling process went on with a rapidity sufficient to abnormally harden or produce incrustation The incrustation preventing the escape of the heat further down in the box, in my opinion, prevented the proper seeding of the stock immediately under this incrustation.

C. Q. 93. You mean an abnormal incrustation?

A. Yes, sir.

C. Q. 94. It is well known that if such an incrustation be produced on the surface and allowed to remain there it will prevent the balance of the stock from seeding, is it not?

A. I believe it is so considered, and that is my experience.

C. Q. 95. A sudden lowering of the temperature at the surface, amounting to only a few degrees Fahrenheit, is sufficient to produce such abnormal incrustation, is it not?

496 A. It is, if the lower temperature is of any considerable duration.

C. Q. 96. In seeding oleomargarine stock you have to be careful not to allow drafts of air to blow across the surface of the stock for that reason, do you not?

A. Drafts of air are deleterious to proper seeding of the stock and are avoided when possible for the reason that it suddenly chills and produces incrustation.

C. Q. 97. Will you please describe the room in which you seeded that stock for the tests, termed press No. 1 and press No. 2?

A. The room was located in the southwest corner of the building

known as 133 Park street, and is about forty feet square, as near as I can judge, on the second floor above the street, with three windows on the south side and three windows on the west side; the elevator, which is situated in the centre of the building, passing up through this room to the stories above, being boxed in, with doors on the north side and south side, completes the description of the room with the exception of one door leading into the dressing-room, two doors leading into the press-room, which is partitioned off from the seeding-room by a wooden partition, with one door at the head of the stairway from the story below, and one door at the foot of the stairs leading to the story above; steam pipes for heating purposes being ranged along the south and west sides of the room, with the main pipe leading the steam to the coils in the butter-room passing overhead. The room is ceiled for about half the distance from the west side overhead to the elevator, which is on the east side of the room.

C. Q. 98. At what point in that room did the seeder stand from September 28 to October 1, and was it moved at all while the stock was in it?

A. The seeder stood in the center of the room, as nearly as I can judge, and was not moved, so far as I have any knowledge, between September 28 and October 1.

C. Q. 99. The moving or jarring of a seeder during the seeding process or the disturbance of its contents in any way tends to interrupt and defeat the seeding process, does it not?

497 A. I don't believe that stock is in its process of seeding so delicate that a jar or the moving of it or the turning of the box about carefully would interfere to any perceptible degree with the proper seeding of the same, while I do believe that if the contents of the seeder were moved or turned over or mixed to any extent the proper seeding would be materially interfered with.

C. Q. 100. In practice you avoid all disturbance of the seeders during the seeding process, as far as possible?

A. As much as possible; yes, sir.

C. Q. 101. Of course, as you were not in the seeding-room during Monday night or Tuesday night or Wednesday night, you cannot state what took place there at those times, but I wish to enquire whether any of the windows in that room were open at any time during Monday, Tuesday, or Wednesday while you were there?

A. They were not, to my knowledge.

C. Q. 102. Did the doors stand open or were they closed?

A. The door leading to the story above was open and one of the doors on the north side of the elevator was open for the purpose of reducing the temperature of the room from 86°, which the thermometer indicated when the seeder was put into that room, until eight o'clock or after on Monday evening; the steam, which in the process of hashing was sixty to seventy pounds, was reduced as soon as possible to prevent the leakage of the same into the pipes passing through that room, this being the fairest and most practicable method of gradually getting the temperature of the seeding-room down to 80°.

C. Q. 103. Were the windows curtained or shaded in that room?

A. The three windows on the south side have close blinds, which were closed; the windows on the west side had neither curtains nor blinds.

C. Q. 104. In what part of the room is the door situated which leads to the story above?

A. It is in the northwest corner.

C. Q. 105. What was the temperature of that room during Tuesday, September 29th, and what the condition of the doors and windows?

A. The temperature of the room was kept substantially at
498 80° to 81°, the door leading to the story above being open at times when it was anticipated the temperature might rise above the degrees specified in this answer.

C. Q. 106. Answer the same question as to Wednesday, September 30th.

A. I answer substantially as in the last preceding answer.

C. Q. 107. Were you in that room all the time on Monday, Tuesday, and Wednesday from the hour of going to your business in the morning to the hour of leaving it at night?

A. I was not, but visited the room at intervals of an hour or an hour and a half during the time indicated in the question.

C. Q. 108. What was the condition of the weather in New Haven during those three days; was it hot or cold, fair or foul?

A. Monday was quite a warm day; think Tuesday and Wednesday were fair and warm; can't say positively.

C. Q. 109. Why did you select the caul fat instead of other animal fat for that experiment?

A. Because caul fat is considered to produce the best possible product.

C. Q. 110. And does it produce the largest proportion of oleomargarine?

A. It does when obtained free from all extraneous and improper surroundings or accompanyings.

C. Q. 111. Did your caul fat include fat stripped directly from the intestines?

A. It included the fat from the caul and that commonly called the bellies; it did not include fat stripped from the intestines.

C. Q. 112. At different seasons of the year does not the product of oleomargarine oil from fat vary somewhat in amount and quality, and does it not also vary with the food of the animal and the animal's condition?

A. It does.

C. Q. 113. At what times and under what conditions is the yield largest and best, and conversely when is it poorest and least?

A. The yield is the largest and best when the fat is had
499 from animals that have been corn fed, and is poorest when animals from insufficiency of grain feed, or from poor grazing, or from long driving, or from having been a long time in transit by rail.

C. Q. 114. I understand you that the caul fat which you obtained

from that experiment was from animals just slaughtered and was still warm when you obtained it. Am I right?

A. The cattle had just been slaughtered and the fat was warm.

C. Q. 115. How long was it from the time when the cattle were slaughtered to the time when you commenced to chill the fat preparatory to hashing it?

A. Upon inquiry at the slaughter-house as to what time we could get the fat I was informed that they would commence killing about 2 o'clock in the afternoon of Monday, September 28th, and that we could get it about 5 o'clock. We did get it with our team, and brought it to the factory about 5.30 that day, when it was immediately cut and put on the ice as soon as we could do it.

C. Q. 116. Please describe more specifically the washing and chilling of that fat preparatory to hashing it, and in the course of your answer please refer to the following points:

First. Did you wash it in ice water?

Second. Did you apply ice water to it or only ice?

Third. How fine was the ice?

Fourth. How fine did you chop the fat?

Fifth. In what kind of a vessel or box did you do the chilling?

Sixth. How did you apply the ice to the fat—that is to say, did you mix it up with the fat, or cover the fat with the ice, or place the fat on the ice?

Seventh. How long was the fat subjected to the action of the ice or ice water?

A. We did wash it in ice water. We applied ice water to it, in which the ice was floating at the time. The ice was broken into lumps that would weigh from a pound to three pounds each. The fat was cut in pieces the size which we ordinarily cut it to pass it through the hasher—from a piece as large as my hand to as
500 large as my two hands. The chilling was done in a wooden box, the dimensions of which, I should think, were six feet by four feet by twenty inches, arranged to let off the water after being washed. The ice was mixed with the fat and water let in until visible on the top of the fat, and then the whole covered with a layer of ice. The fat was left in this box from about 6.30 Monday night until 8 o'clock the following morning.

C. Q. 117. I think you have inadvertently confused in some of your answers the operations of Monday, September 28th, and Tuesday, September 29th, as I observe that in some of your answers you refer to the purchase of the fat and the chilling of it preparatory to hashing as occurring on Monday, September 28th, while in other answers, as, for example, answer 102, you refer to the seeding as going on on Monday, September 28th. As I do not wish to take any advantage of such apparent contradictions, but desire only to get at the facts, I will ask you to make such corrections as you may deem proper, in order that there may be no confusion of the dates.

A. In answer 102 Monday evening should have been Tuesday evening. The fat was hashed on Tuesday morning, and the seeding process commenced after 1:30 that afternoon. If I have said any-

where else that the seeding began on Monday, it should have been Tuesday.

Redirect by Mr. C. K. OFFIELD:

Q. 118. How often do you wash press cloths such as used in press No. 1 and No. 2 when you constantly use them?

A. We usually wash them after having used them twenty-four hours, during which time they have been used for from three to five pressings when running day and night as we have done.

Q. 119. Is this Mr. Sykes who attended to the detailed and mechanical portions of the two experiments directed by you skilled and competent for that purpose, and how do you know the fact?

A. He is a competent, careful, painstaking man who has been in my employ since 1877 or 1878.

Q. 120. Have you the slightest reason to believe or suspect
501 that he did not fully carry out your instructions as given?

(Objected to as incompetent and leading.)

A. I haven't the slightest doubt but that he fulfilled the express letter of the instructions given by me.

Q. 121. Your testimony leaves it in doubt whether the seeder which contained the two iced pans and contents as you have described stood in the same room where the seeding and pressing took place. How is that?

A. The seeder in which the iced pans were surrounded with ice was on the floor below the seeding-room and press-room and was not in the seeding or press room at all.

Q. 122. You were particularly interrogated as to whether you followed and adhered to the exact figure suggested in the Megé patent expressing the degree of heat for melting, namely, 103°. Is it not a fact that you have followed exactly and precisely the Megé patent sued upon in melting your fat, namely, to slowly raise the temperature in the melting kettle so that the matter shall completely separate, the greasy matter having no taste of fat, but on the contrary having the taste of molten butter, and being perfectly limpid?

(Objected to as grossly leading and as calling for a legal opinion as to the construction of the Megé patent, and also as not representing the Megé patent rightly.)

A. The instructions of the Megé patent were followed in the treatment of this fat in a manner similar to that in treating all the fat converted by me or at my factory into oleomargarine.

Q. 123. Question repeated.

(Objection repeated.)

A. Yes; in all the fat treated by me.

Q. 124. You and the learned counsel saw fit to speculate in several cross-questions and answers regarding a supposititious seeding of stock at a temperature of 80°, provided the stock had been melted or settled at 120° or a higher temperature. Have you intended to express any speculation or hearsay as to this matter, except to the

effect that by a higher heating of the oil the temperature of the seeding-room until the oil could cool down some would have little or no effect on the seeding operation?

502 (Objected to as grossly leading and attempting to put into the witness' mouth a theory and an opinion that he has not even so much as hinted at up to this time, and which would be entirely inconsistent with his 78th answer.)

A. I have not so intended.

Q. 125. Would a draft from a window blowing across a seeder containing seeding stock have any deleterious effect on the seeding stock unless such air-draft was substantially cooler than the stock, and in fact cooled it below 86°?

(Objected to as calling for mere guess-work, unless the witness' answer is based upon actual tests made in which he ascertained the temperature of the air-draft and compared it with the temperature of the stock.)

A. I think it would not.

Recross-examination *de bene esse*, by Judge HILL:

C. Q. 126. You have stated that in your business of rendering fat at your factory you have carefully followed the directions of the Megé patent. One of the most prominent directions in that patent is to prepare and use an artificial gastric juice in melting the fat, and another of the most prominent directions of that patent is to take care that the temperature during the melting process shall not exceed 103° Fahr.; another prominent direction of that patent is to prepare the fat for melting by subjecting it to the action of sea salt and sulphite of soda. Did you ever follow or attempt to follow any of those directions in your manufacture of oleomargarine oil or oleomargarine butter?

(Objected to as not containing a correct statement of the Megé patent.)

A. I never have.

NATHAN EASTERBROOK, JR.

Subscribed and sworn to before me this 6th day of October, A. D. 1885.

CHARLES KLEINER,
[SEAL.] *Notary Public.*

503 And thereupon complainants' counsel called as a witness in their behalf HENRY M. SYKES, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows, in answer to interrogatories by said C. K. OFFIELD:

Q. 1. Please state your name, age, residence, and occupation.

A. Henry M. Sykes; forty-seven; New Haven; in the employ of the Easterbrook Company.

Q. 2. Is the business of that company carried on at the oleomargarine factory in New Haven of Mr. Nathan Easterbrook, Jr., who has just given his testimony?

A. It is.

Q. 3. How long have you been in the employment of Mr. Easterbrook and how long have you worked in his above factory?

A. Seven years, commencing in the fall of 1878.

Q. 4. What have been your principal duties while so employed?

A. I have had charge of the whole shop nights most of the time, and have worked at all branches of the business.

Q. 5. Are you familiar, practically, with the manufacture of oleomargarine oil, as carried on in that factory?

A. I am.

Q. 6. At what temperature has the oleomargarine stock been seeded or granulated during the last seven years at that factory?

A. At a temperature of 86° to 88°.

Q. 7. What has been done with the stock if the temperature should fall to 80° or 81°, so as to produce the effect of this temperature upon the stock?

(Objected to as not rebuttal.)

A. Remelted and reseeded.

Q. 8. Were you present last week at certain experiments made or directed by Mr. Easterbrook, between Monday and Saturday, inclusive, consisting of hashing fat, melting, settling, seeding, chilling, and pressing it to produce oleomargarine oil?

504 (Objected to for the same reasons noted in the objection to question 8 of Mr. Nathan Easterbrook Jr.'s deposition in this case, and without repeating these objections to every question and answer upon the subject of said experiments the objections will be insisted upon at the hearing as applying to said subject and all questions and answers in this deposition relating thereto.)

A. I was.

Q. 9. State whether or not there was any time during the conducting of those experiments, either night or day, when Mr. Easterbrook was away, that you did not have full charge, knowledge, and oversight of the same.

A. There was not.

Q. 10. Without multiplying interrogatories, will you begin at the beginning, Monday, last week, September 28, and ending Saturday, October 3, and give a concise statement of your share in the experiments of Mr. Easterbrook and the time you devoted to the same and the facts connected therewith, using any memorandum made by you at the time you so desire?

A. On Monday afternoon of September 28, at about six o'clock, received the fat to be used for this purpose. I cut it up into chilled water, letting it remain until the next morning, the 29th, when I changed the water, taking particular pains to cleanse the fat; then, about 8.40, took it out for hashing, finishing the hashing at 9.30. The temperature of the fat at the finishing of the hashing was 115°.

I then gradually increased the heat up to 120°, where it remained until I drew it from the rendering kettle into the settling tank. This was at 10.50 a. m. The temperature of the settling tank had been raised to 120°; at 1.10 p. m. drew it from this settling tank into the seeder, the temperature still being 120°. I then removed the seeder containing the stock into the room where it was to remain unmoved and the temperature to be kept in the room at 80°. The temperature at the time of drawing off the stock in the room was 87°. It took me till 10 o'clock at night to reduce it to the temperature wanted, 80°. It remained so then until noon of the next day, when it rose to very near 83°. For about two hours it took then to get it back again to 80°. After that time it was 80° all the time. Thursday, October 1, at 4.30 p. m., after thoroughly
505 mixing this stock, took from it 182 pounds, and this I subdivided equally into two pans of ninety-one pounds each; the dimensions of these pans, twenty inches long, twelve inches wide, and fourteen inches in depth. I then took these pans filled with this stock, placed them in another seeder, and surrounded them with broken ice; on Saturday, October 3, at about nine a. m., took one pan from this ice and emptied it onto a table for the purpose of cutting it into cakes for pressing; cut this stock into cakes of nine and one-half inches by five and one-half and one inch thick. I put plates heated in water to 120° at 11.03; at 11.30 put this stock into press, using the heated plates, taking one out at a time as required, thoroughly wiping them before using. The temperature of the press-room at this time was 82°; first oil appeared at 12.19; at 12.30 begun to be some show of stearine, the pressure at this time being 125 tons. I stopped the press at that time about ten minutes; then, at 12.57, with the pressure at 150, the full capacity of the press, stopped the power; took up the press at 2 p. m., after it had ceased dripping. I obtained oil from this press, twenty-one pounds, fifty-five pounds of stearine, there being four pounds stock left that was not used for want of room. I then went immediately down to take out the second pan; emptied and cut the stock in the same manner as the first; put plates in water; heated it to degree of 100. This was at 4.25 p. m.; at 4.32 commenced putting up second press, the temperature of the room at this time being 83°. We immediately commenced pressing. The first oil appeared at 4.57. The full capacity of the press, 150 tons, was reached at 5.10. We stopped about twenty minutes to increase the temperature of the room, starting the press again at 5.30, the full capacity of the press being reached at 5.45. We then let it drip one hour, to 6.45. The temperature during this last time of using the pressure was 90°, while within a foot of the rear of the press it was 102°; at 6.55 took up the press. I obtained twenty-three pounds of oil, sixty-one stearine; five and one-half pounds of stock not used. During the using the press, in the first press we stopped the press four times, of from five to ten minutes each. We stopped three times during the last press.

506 Q. 11. How much of the time between September 28th and October 3d, inclusive, were you present in the factory and

had personal knowledge or oversight of the experiments just detailed by you?

A. All of the time except when absent for my meals.

Q. 12. Where did you sleep?

A. In the factory.

Q. 13. How frequently did you take the temperature of the room and examine the condition of the experiments, particularly in the night, between the dates last mentioned?

A. During the day about every half hour; in the night every hour, except when once or twice I slept over two hours.

Q. 14. Was that stock disturbed in any manner or anything put into it or taken away from it before it was pressed?

A. Not disturbed nor nothing put in or taken away.

Q. 15. During the whole time were any of the windows open so that the air could blow in on the stock in the seeding or press room?

A. There was not.

Q. 16. Are you familiar enough with oleomargarine oil to distinguish between a pure prime quality of oleomargarine and a compound of oleomargarine and stearine?

A. I think I am.

Q. 17. Did you taste, handle, and smell the product that was squeezed out in the presses in those two experiments?

A. I did.

Q. 18. Was that product pure or prime oleomargarine or an admixture of oil and stearine?

A. It was not pure by any means, the stearine being both plainly visible to the taste and eye.

Cross-examination by Judge HILL:

Without waiving any of the objections above noted, defendant's counsel proceeds to cross-examine *de bene esse:*

C. Q. 19. How much stock do you say you put into that press for the first experiment?

507 A. Eighty-six and a half pounds—no, eighty-seven pounds.

C. Q. 20. And how much did you put into the press for the second experiment?

A. Eighty-five and a half pounds.

C. Q. 21. In the first experiment you got twenty-one pounds of oil and fifty-five pounds of stearine?

A. That was the way I testified. On thinking it over I am not positive, but think I got sixty-five and a half pounds of stearine; the oil is correct.

C. Q. 22. Sixty-five and a half pounds of stearine and twenty-one pounds of oil make a total of eighty-six and a half pounds of oil and stearine out of eighty-seven pounds of stock, without allowing for the absorption of the oil into the cloths. Now will you tell us how many cloths you used in that first experiment and what their size was?

A. Forty-eight cloths, each cloth, I believe, seventeen by twenty-two inches; am not positive, but that is what I think the size was.

C. Q. 23. Don't you know that forty-eight new duck cloths of that size would absorb at least five or six pounds of oil?

A. I should say they would.

C. Q. 24. How much oil and stearine do you say you got out of the eighty-five and a half pounds of stock pressed in the second experiment?

A. Twenty-three and a half pounds of oil and sixty-one stearine.

C. Q. 25. That is to say, you got eighty-four and a half pounds of oil and stearine out of eighty-five and a half pounds of stock in that experiment?

A. Yes, sir.

C. Q. 26. In that second experiment you used the same forty-eight press cloths that you had used in the first experiment, did you not?

A. I did.

C. Q. 27. And they were already saturated with oil when you took them to use in the second experiment, were they not?

A. They were.

508 C. Q. 28. Inasmuch as you got eighty-six and a half pounds of oil and stearine out of eighty-seven pounds of stock in the first experiment with forty-eight new dry cloths, and in the second experiment got eighty-four and a half pounds of oil and stearine out of eighty-five and a half pounds of stock with the same cloths already saturated with oil, it would seem to follow that the forty-eight dry cloths absorbed one-half pound of oil, and the forty-eight saturated cloths absorbed twice as much, to wit, a pound, would it not?

A. It would seem so by my answer; but I would like the privilege of explaining and correcting myself once more. My record here for the first press is correct: Twenty-one pounds of oil, fifty-five and a half of stearine, making seventy-six and a half pounds. When this amount was first spoken of by Mr. Offield I thought possibly I might have been mistaken, and in answering Judge Hill's cross-examination I confused the weight of the box and the stearine together. The box referred to is the box that I weighed the stearine in, which weighed ten pounds, the stearine and box together actually weighing sixty-five and a half pounds. Deducting the weight of the box gives fifty-five and a half pounds of stearine.

C. Q. 29. So that the cloths absorbed ten and a half pounds of oil in the first experiment?

A. I should say about that, being new.

C. Q. 30. Do you know what the temperature of the seeding-room was on Tuesday evening when Mr. Easterbrook left?

A. Either 84° or 83°.

C. Q. 31. Up to that time the seeding had gone on all right, had it not?

A. To all outward appearance; yes, sir.

C. Q. 32. What was the temperature of the seeding-room the next morning at 8 o'clock?

A. Wednesday morning, 80°.

C. Q. 33. Was the seeding going on all right at that time?

A. No, sir.

C. Q. 34. A thin, hard crust had formed over the stock at that time, had it not?

A. Well, I should judge, a little more than a thin crust. It was an inch thick at least.

509 C. Q. 35. When did you first observe that crust beginning to form?

A. To be as near correct, about 8 o'clock on Tuesday night.

C. Q. 36. What had chilled the surface of the stock to produce that crust at that time?

A. The temperature of the room.

C. Q. 37. Mr. Easterbrook has testified in the twelfth answer of his deposition in this case that "notwithstanding all the precautions which it was possible for us to take to keep the temperature of the room down, from the situation of the stock-room on the south side of the building and from the fact of its being a warm day, the room at no time up to eight o'clock p. m. of that day (the 29th) was less than 86° Fahrenheit." I understand you now to testify that the room at eight o'clock p. m. of that same day was 83° or 84° Fahrenheit. Who is it that is guessing at this matter, you or Mr. Easterbrook?

A. This time referred to by Mr. Easterbrook is, I understand it, the general temperature of the room through all this time. I took charge of it at 7.45 p. m., Mr. Easterbrook then telling me it was either 83° or 84° at that time—7.45. At 8 o'clock, from my own knowledge, it was 83°.

C. Q. 38. Did you keep a written memorandum of the temperatures as you took them from time to time during that seeding?

A. I commenced at 11 o'clock p. m. Tuesday, September 29, up to Saturday morning, October 3, and kept a written memorandum during that time.

C. Q. 39. Will you please read that memorandum to the examiner, in order that he may copy it upon the record?

(At this point Mr. Offield takes the memorandum from the witness and carries it off into another room, with Mr. Easterbrook, where he keeps it for some time. This statement is made at the request of the defendant's counsel.)

Complainant's counsel replies that the memorandum book was inspected and submitted to Mr. Easterbrook for the purpose of ascertaining if it contained other and private memorandums

510 irrelevant and not to be inspected by defendant's counsel or made a part of this record, and that had it contained such private matter it would not have been submitted, but is now submitted as a part of this witness' deposition without the trouble of copying the same into the record, and marked "Sykes memorandum."

Defendant's counsel accepts the book in place of an answer to the last question.

C. Q. 40. It appears from this memorandum book that the temperature, which was 87° when the stock was drawn into the seeder at 1.10 p. m. of Tuesday, September 29, had fallen to 80° at 10 p. m. of the same day, does it not?

A. It does.

C. Q. 41. And it appears that you have no memorandum of the temperature of the room when you took charge of it that evening at 7.45, but rely entirely upon your memory in contradicting the statement of Mr. Easterbook, who testifies that at no time up to 8 o'clock of that day was the temperature of that room less than 86° Fahrenheit; am I correct?

A. I think that I had a record of it, but I had no idea of keeping anything until this memorandum book occurred to me.

C. Q. 42. But, so far as you differ from Mr. Easterbrook as to the temperature up to 8 o'clock p. m. of that day, you testify from memory only and not from memorandum?

A. Yes, sir.

C. Q. 43. Assuming that Mr. Easterbrook was correct in testifying that the temperature of the room was 86° Fahrenheit up to 8 o'clock p. m., and that the seeding was going on all right up to that hour, and assuming that your memorandum is correct, that the temperature of the room was 80° Fahrenheit at 10 o'clock p. m. of that day, and that the seeding was checked and the hard crust commenced to form somewhere about 8 o'clock that evening, it would follow that there was an abrupt fall of temperature amounting to 6° Fahrenheit within those two hours from 8 p. m. to 10 p. m. of Tuesday, September 29, and that that sudden fall of temperature was accompanied by the development of the hard crust, which put an end to the further seeding of the stock and render all subsequent proceedings useless; am I not correct?

511 A. My answer is that there was no such sudden fall.

C. Q. 44. You have testified that, according to your own memory, the temperature of the room was either 83° or 84° Fahrenheit when you took charge of it, at 7.45 p. m., September 29. If it was 84° Fahrenheit at that hour and 80° Fahrenheit when you observed the thermometer at 10 p. m., about two hours later, there was at least a fall of 4° in those two hours or some part of those two hours, was there not?

A. Yes, sir.

C. Q. 45. Then the fall of temperature in those two hours amounted to twice as much as the entire fall of temperature in the preceding seven hours, did it not?

A. Well, about that.

C. Q. 46. So that the temperature commenced at about 8 o'clock p. m. that day to fall seven times as fast as it had been falling for seven hours before that time? That also is true, is it not?

A. Only a question of figuring. I can't figure it.

C. Q. 47. But it is a fact that the formation of the crust took place with that rapid fall of temperature, is it not?

A. Don't think it did.

C. Q. 48. Will you, then, tell me when it did take place?

A. Not being there watching it all the time, couldn't exactly tell. I first noticed the beginning of a crust about 8 p. m.

C. Q. 49. Mr. Easterbrook has testified in his answer 36 that up to 8 o'clock Tuesday night, September 29, the usual indications of proper seeding were visible, but when he returned the next morning the proper seeding characteristics had disappeared, and there was a crust of an inch or more of hard stock which remained till the end of the so-called seeding part of the experiment. Now, who is right about this, Mr. Easterbrook or you?

A. Commencing at 7.45 p. m. of that day, I am correct as regards temperature and to the first appearance of this crust about 8 p. m.

C. Q. 50. Are you a man of a good deal of experience in the seeding of oleomargarine stock?

A. I don't pretend to be an expert by any means, but have always watched the progress with care.

512 C. Q. 51. Have you had charge of the seeding in Mr. Easterbrook's works?

A. Yes, at night-times, for six years.

C. Q. 52. You are aware, then, I suppose, that the formation of such a crust prevents any further seeding of the stock, are you not?

A. Yes; I am.

HENRY M. SYKES.

Subscribed and sworn to before me this 6th day of October, A. D. 1885.

[SEAL.] CHARLES KLEINER,
Notary Public.

Complainants' counsel here states that the depositions in this case will be resumed to-morrow, October 7, at 2 p. m., at the office of James Wilson, 32 Beaver street, corner of Broad, and there concluded.

UNITED STATES OF AMERICA, *District of Connecticut*, } ss:

I, Charles Kleiner, a notary public in and for the county of New Haven, State of Connecticut, and residing in the city of New Haven, in said county and State, do hereby certify that the foregoing depositions of Nathan Easterbrook, Junior, and Henry M. Sykes were taken before me pursuant to the statement of attendance in the caption hereto entitled.

That the said depositions were taken on behalf of the complainants in said cause, and that the said witnesses were each by me duly sworn to testify the truth, the whole truth, and nothing but the truth in said cause, and the deposition of each of said witnesses was reduced by me to writing in the presence of the witness and of counsel for the parties noted herein as present and read over to the witnesses, who each of them in my presence subscribed the same as and for his deposition in said cause.

In witness whereof I have hereunto set my hand and official seal this sixth day of October, 1885, at the city, county, and State aforesaid.

[SEAL.] CHARLES KLEINER,
Notary Public.

Deposition fee, $20.00, paid.
(C. K.)

513 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

At the city of New York, county and State of New York, at room No. 155 in the Astor House, in said city, on the 8th day of October, A. D. 1885, before me, Pierce J. Quinn, a notary public for said county of New York, duly authorized, &c., personally appeared Charles K. Offield, Esq., in behalf of complainants, and Judge Lysander Hill, in behalf of defendants; and thereupon the following proceedings were had:

Complainants' counsel called as a witness in their behalf REUBEN U. REED, who, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by said C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. Reuben U. Reed; aged sixty; reside at Alston, Mass.; occupation, superintendent of the Commercial Manufacturing Company at Brighton.

Q. 2. Is that a Massachusetts corporation, what business does it conduct, and how long have you been superintendent?

A. It is a Massachusetts corporation; its manufacture is oleomargarine and its products; I have been superintendent since fall of 1880.

Q. 3. State whether or not you are personally perfectly familiar with the manufacture of oleomargarine, both as to process and product.

A. I am.

Q. 4. Have you ever made attempts or tried the experiment of the production of oleomargarine oil by pressing the "stock"
514 containing the same between hot or warm plates? And, if so, you may please begin at the beginning and state concisely and accurately the steps you took in so doing. Please answer fully, without separate questions to draw out the facts.

(Objected to as irrelevant, immaterial, incompetent, and not rebutting evidence, this objection to be applicable to all questions and answers that may be asked of you relating to any experiments

except the experiment made at defendant's factory in June last and testified to by defendant's witnesses.)

A. Some two months ago Mr. Hobbs, the treasurer of the company, asked me about an experiment that was made some years before, a year ago, by Professor Morton, with hot plates. He said, as he was not there at the time, he would like to have me make a similar experiment. I told him I would do so. He asked me several times afterward if I had done it. I told him no, but would, as I would like to see the result myself. On the 9th of September we received fats of the usual quality; they were put into tanks, cooled off with ice and water, and remained there all night. Thursday morning, September 10th, the fats were taken out of the water, cut into strips or pieces, put into the "jigger," and sent to the "hasher," where they were hashed, run into melting kettles, and remained in the melting kettle until the fats became thoroughly melted; temperature, 120°; then the paddles were raised and the oil or melted fat allowed to settle, which would take some three-quarters of an hour or an hour; it varies some time about settling. After being thoroughly settled or clear it was run off through draw-pipes to smaller kettles below, where steam was applied to jacketed kettles, and run it up to 130°. After remaining there some two or three hours to thoroughly settle it was run off through draw-pipe into coolers or receiving tank at a temperature of 128°. This was done between three and four o'clock on Thursday afternoon, the 10th of September. It was run twelve or fourteen inches deep into this cooler or receiver. The temperature of the room was 85° or 86°. That remained until Saturday morning, September 12th, having in the meantime perfectly seeded or granulated, but not in a hard condition suitable for cutting with a knife in slices. Shortly after 7 o'clock on the
515 morning of the 12th I had this can of oil placed in a tank of ice water. This can that I speak of is an upright galvanized can or cooler. It is about two feet in diameter; I don't know about the size—about that. After remaining in this tank from one and a half to two hours it became sufficiently hard to empty out on the table. It came out in a solid form like a cheese. This was about 9 o'clock on the morning of September the 12th, Saturday morning. While the oil was cooling we had some of the plates of the press placed in a tank of water. The temperature of the water as tested was 125° F. The plates were then taken out, placed in the press; this fat was cut into slices some three-fourths to an inch in thickness, done up in our usual press cloths. I then tried the temperature of the plates by placing the thermometer between them. I tried it in two or three places. It showed a temperature of 90° to 95°. The cloths containing this fat cut into slices were then placed on these plates and the pressure applied—a pressure of 365 tons. After the oil was pressed from the stearine, or what was left, the cloths were removed from the plates, stearine carefully shaken out and weighed. We used in this experiment thirty-seven and a half pounds of "stock." We got seven and a half pounds of stearine, or twenty per cent. What product was left could not be called, in my

judgment, a good oil, a fine oil, having the appearance of more or less stearine. The character of it was such as would show more or less stearine. That was experiment number one.

I then made a second trial, heating the water for the plates, using the same stock. The water was 155°, with the plates in the water at that temperature. The plates were then taken out and placed in the press. After being placed in the press, where temperature was tried again with thermometer, being placed between the plates in different places, showed a temperature of from 105° to 110°. The "stock" was then cut into slices, placed in the same press cloths as at the first trial, placed between the plates, pressure applied as in first trial—365 tons. When the product was all pressed the stearine, or what remained in the cloths, what we call stearine, I would say, after the product had done flowing from the cloths, which
516 was in each case, each trial, some three-quarters of an hour, was used in pressing, each press. The cloths were then removed from the plates; the stearine carefully shaken out and weighed. In this trial we used thirty-eight pounds of "stock." We got two and one-fifth pounds of stearine, or six per cent. The product that flowed off from the press while pressing was much more like stock than oil. That's all the experiment that I ever made with hot plates, above two trials. I might say here I did not weigh the oil; I only weighed the stearine. I did not weigh the oil or product, whatever you please to call it, from the fact of using so small a quantity of "stock" in so large a press and the product flowing over the sides, running down onto the pan below, where it flows off in a trough, tin lined, leading into a large tank for receiving oil. From above facts it would be impossible to get a correct weight of the product.

Q. 5. Who assisted you in preparing the stock and making these two experiments?

A. Mr. Lyman Merrill, who has charge of helping receive and take care of the fats, hashing and rendering the same into oil. Martin Pendleton, who is night watchman, has charge of the seeding-room nights and also assists in pressing the oil.

Q. 6. Are they competent parties for the particular duties you assign them in these experiments?

A. I consider them so, having each been with me since we first started the factory.

Q. 7. Was any other stock in either press or was any other stock or fat treated or melted around the factory during the time you made these experiments?

A. There was more fat hashed at that time and melted and run into small kettles, where it remained, only using what I have heretofore described. There was no other stock in the press while this was being pressed.

Q. 8. State whether or not this liquid product which flowed from the presses in both experiments chilled or remained to any extent on the cold plates or metallic troughs over which it flowed under the pressure; and, if so, give the reason for it.

517 A. As it flowed down over the cool plates a good deal of it did remain on those plates. My reason for it would be that so much stearine in it cooled or chilled more readily.

Q. 9. Was this liquid product or admixture of stearine and oil which flowed from the presses in both experiments in any respect a practical, successful, and merchantable quality of oleomargarine oil?

A. I should consider it not, showing more or less of stearine.

Q. 10. Can oleomargarine oil ever be obtained by the use of hot or warm plates under pressure, no matter how thoroughly or effectively the stock is granulated or seeded for that purpose?

(Further objected to as leading and calling for an opinion based upon insufficient data and by one not shown to be competent to express an opinion which would be legal evidence on the subject.)

A. Not in my judgment.

Q. 11. No matter how thoroughly oleomargarine stock is seeded or granulated, what is the only manner in which it can then be treated so as to separate the oil from the stearine for oleomargarine oil?

(Same objection.)

A. By treating it the same that the stock for these experiments was treated up to the time we placed a cooler of oil in tank of ice water to harden.

Q. 12. Had these cloths you used in both pressings been previously used for pressing oil without washing, and what effect did such previous use have on the capacity of the cloths for absorbing or retaining oil in the experiments made by you?

A. They had been used once previously. The tendency would be, being saturated with oil from previous use, would not retain so much of the oil from the stock used in above experiment.

Q. 13. At the time you made these experiments did you have any idea or intimation that you would be called as a witness or that they would be made a matter of record in any suit?

A. I had not.

Q. 14. Was anything added to or taken away from this melted fat or stock from the time it went into the melting kettle until pressed, as you have described?

518 A. There was not, to my knowledge.

Q. 15. State whether or not such stock at the time you submerged it in ice water, on the morning of September 12th, in the galvanized tank or cooler was in a perfectly seeded or granulated condition for the production of prime oleomargarine oil.

A. It was.

Q. 16. What kind of fat did you use?

A. Beef.

Q. 17. When did you first know you would be called as a witness as to this matter?

A. Tuesday morning of this week, between nine and ten o'clock, forenoon.

Cross-examination by Judge HILL:

(Without waiving any of the objections hereinabove taken, defendant's counsel cross-examines *de bene esse*.)

C. Q. 18. You have expressed the opinion that oleomargarine oil cannot be properly separated from stearine by chilling the crystallized stock, slicing it, and pressing it in bags between hot or warm plates. That opinion is based entirely on your two experiments about which you have testified, is it?

A. I assisted Professor Morton; was with him at our experiment, some year ago, at our factory at Brighton. What I saw then and there, with the experiment that I made September 12, 1885, satisfied me that it could not be done in a satisfactory manner, producing a fair amount of prime oleomargarine oil. My opinion is based upon those three experiments and general knowledge of the business.

C. Q. 19. Were you running your manufactory of oleomargarine oil or butter during the month of September, 1885?

A. We were receiving fats steady and converting them daily into oil.

C. Q. 20. Do you make any butter at Brighton, or only oil?

A. We make no butter at Brighton; we make only oil.

519 C. Q. 21. What did you do with the oil which you pressed out of that thirty-seven and a half pounds of stock in your first experiment?

A. Well, all of it that would ran down into the receiving tank—oil tank.

C. Q. 22. And what was done with it afterwards?

A. It was afterwards taken out from the tank; sent up to the big kettles to be run over with fresh fat, as we always do with any small amount of oil or stock.

C. Q. 23. Am I to understand that when these two experiments were going on your other operations at the factory were suspended for the time being?

A. They were not suspended; going on as usual.

C. Q. 24. Did you thoroughly mix or stir up the seeded stock before chilling it?

A. I did not disturb it.

C. Q. 25. Did you chill all the stock that was in that seeder?

A. I did.

C. Q. 26. I understand that in your first experiment the temperature of the plates, as near as you could ascertain by the means you adopted, averaged ninety-two and a half degrees, and that in your second experiment it averaged one hundred and seven and a half degrees. Am I substantially correct?

A. The temperature of the same plate would not be the same all over that plate. The thermometer placed near the edges of the plate in this first experiment showed a temperature of ninety degrees. By placing the thermometer in the middle of the plates, between them, it showed a temperature of ninety-five degrees. In the second experiment it showed in like manner one hundred and five degrees at the edges and one hundred and ten degrees in the middle.

C. Q. 27. That is what I understood, and hence I judge that 92½° would be a fair average for the temperature of the plates in the first experiment and 107½° a fair average in the second experiment, taking a point midway between the two extremes in each case. It is fair to assume the mean or average temperature at 92½° and 107½° respectively, is it not?

A. I think not. You could not get the proper degree
520 of heat in different parts of the plates on an average taken that way.

C. Q. 28. Well, from all your knowledge of the facts give us, as near as you can establish it, your estimate of the fair average temperature of the plates in the two experiments.

A. Well, the above would give a mean temperature of the weather, but I don't think it would be applicable in this case as applied to the fats between the plates.

C. Q. 29. I am not talking of fats, but of plates. If the temperature of the plates was 90° at the edges and 95° at the center, there was an average or mean temperature of the plates somewhere between 90° and 95°. I want to get an idea of that average point. I assume it to be 92½°.

(Complainants' counsel admits that the mean temperature of the plates was 92½° in the first experiment and 107½° in the second experiment, this admission based on statement of witness.)

C. Q. 30. The quality of the oil, so far as freedom from stearine is concerned, was better in the first experiment than in the second, was it not?

A. It was.

C. Q. 31. In the ordinary run of your business at Brighton about what per cent. of oleomargarine oil and what per cent. of stearine do you get from the stock?

A. From 78 to 82 per cent. of oil, 18 to 22 per cent. of stearine.

C. Q. 32. How high a percentage of oil do you ever get at the highest and how low at the lowest?

A. I don't remember getting over 82½ to 83 per cent. of oil at the highest nor less than 76 or 77. I don't think we ever got so low as 76—possibly 76½. I keep a record of all percentages monthly.

C. Q. 33. What causes these differences of yield?

A. Quality of the fat, heavy fats yielding a larger percentage of oil than lighter ones.

C. Q. 34. In speaking of heavy fats and light fats, are you referring to beef fats of different quality or different kinds of fat, such as mutton fat, hog fat, etc.?

A. I am referring to beef fat only of different qualities.
521 C. Q. 35. When treated by the same process?

A. Yes.

C. Q. 36. What causes beef fat to thus differ in quality?

A. Take the fat of an ox; from the fat of an ox weighing from 100 to 150 pounds we get a much larger percentage of oil than from the fat of an ox which weighs from 25 to 100.

C. Q. 37. That is to say, the fatter the ox the larger is the relative proportion of oil contained in his fat?

A. It is.

C. Q. 38. You do not know, experimentally, what yield of oil you would have gotten from the same chilled stock used in your two experiments at Brighton if the average temperature of the plates had been, say, 105° F., do you?

A. I do not.

C. Q. 39. Your knowledge is confined to what you did get at an average temperature of 92½° in one case and 107½° in the other case, is it not?

A. As I have before stated, what I saw of Professor Morton's experiment a year ago, these two trials made on the 12th of September, and a general knowledge of the business.

C. Q. 40. Yes, I understand that; but you never tested and do not know how many pounds of oil you would have obtained from that stock on September 12th with the plates at any other average temperature than 92½° and 107½°—am I not correct?

A. You are.

C. Q. 41. By decreasing the average temperature of the plates from 107½° to 92½° you extracted nearly eighteen pounds more of stearine and correspondingly improved your oil, if I understand you correctly?

A. Oil much improved, but not correspondingly.

C. Q. 42. You do not know whether this increased separation of stearine that occurred in consequence of reducing the average temperature of the plates fifteen degrees would have been a constant and uniform increase if you had made tests with temperatures ranging all along down from 107½° to 92½° or whether the increase
522 of stearine would have grown more rapid the lower you reduce the temperature of the plates, do you? I ask the fact, not opinion.

A. Never tried it; do not know.

C. Q. 43. Then, as a matter of fact, and contradistinguished from any opinion, you do not know but that with plates at an average temperature of 85° you would have gotten sixty per cent. of oil and forty per cent. of stearine from the same stock used in your September experiments, do you?

A. As a matter of fact I do not.

C. Q. 44. What was the temperature of the room in which that stock was seeded?

A. From 85° to 86°, the usual temperature for seeding.

C. Q. 45. Was the press in the same room?

A. It was.

C. Q. 46. What kind of a press was it?

A. Hydraulic.

C. Q. 47. Do you always run it at its full pressure, 365 tons, in your business?

A. We do.

C. Q. 48. Did you ever use any other kind of a press in the eleomargarine business at Brighton?

A. Never have.

C. Q. 49. Did you time the pressing in your two September experiments?

A. Partially, so as to know within the hour, not the minute.

C. Q. 50. State, as near as you can, how long the stock was in the press under pressure in each experiment.

A. Some three-quarters of an hour.

C. Q. 51. During any of this time was the press stopped; if so, how long?

A. It was not. I would here state when this experiment was going on before we got through with it the packing of the cylinder for the press leaked so it made the process of running up the press very slow; have since had it repacked.

C. Q. 52. Did you have with that press two pumps?

A. We used only one pump; it was a small amount of stock.

523 C. Q. 53. That was the slow pump for power, was it?

A. It was.

C. Q. 54. How long after you put the pressure on before the oil began to flow?

A. The oil began to flow some from the heat of the plates before the pressure was applied—a little.

C. Q. 55. Did you let the press stand and drip any length of time after you stopped the pressure; if so, how long?

A. I should think from fifteen minutes to half an hour. I didn't time it.

C. Q. 56. You chilled the stock while it was in the seeder where it had been seeding, did you?

A. I did.

C. Q. 57. How much stock was submitted to the chilling operation in the seeder?

A. If I remember correctly it was about 100 pounds; it might have been more.

C. Q. 58. How did you chill it?

A. By setting the seeder in a tank of ice-water or ice and water.

C. Q. 59. Did you cover it over while chilling?

A. I did not.

C. Q. 60. Describe the size and shape of the seeder and the depth of stock in it.

A. It was a round, upright, galvanized-iron seeder. I should judge it was some twenty inches in diameter. I can't say positive, because I don't remember ever measuring it. To the best of my judgment the stock was run in about twelve inches deep.

C. Q. 61. This vessel was set into a larger vessel, and the space between the walls of the two vessels was filled with ice water or ice and water, if I understand you?

A. It was.

C. Q. 62. How high up was the space filled with iced water?

A. I didn't measure it. I should say some twelve or fourteen inches.

C. Q. 63. How long was this stock subjected to this chilling treatment?

A. About an hour and a quarter to an hour and a half; it was not over an hour and a half, I know.

524 C. Q. 64. How did you get the chilled stock out of the seeder?

A. By turning the cooler over on the table and jarring the sides and bottom; it came out like a cake of cheese.

C. Q. 65. When it came out did it leave the sides and bottom of the cooler clean or did it leave stock adhering to it?

A. Not perfectly clean; nearly so. Some little stuck on.

C. Q. 66. How did you slice the cake?

A. With a large knife, the blade some ten inches long.

C. Q. 67. What did you find to be the consistency of the cake throughout?

A. Nearly uniform; cut like old cheese.

C. Q. 68. Under what brands or trade names is your oleomargarine oil sold in the market?

A. Sold as oleomargarine. Tubs are branded, I think. I have nothing to do with that. That is not my branch of the business. I have seen them so marked.

C. Q. 69. How do you distinguish the different grades of your oil?

A. We make but one grade of oil.

C. Q. 70. How is that known in the market as distinguished from other manufacturers' oil?

A. Could not say. We only manufacture what we make into butter.

C. Q. 71. Then you do not sell oil, but only butter?

A. We did formerly; think we have not sold any for a year or more.

C. Q. 72. When you sold oil by what name was it known in the market to distinguish it from other manufacturers' oil?

A. It was branded the Commercial Manufacturing Company.

C. Q. 73. The Commercial Manufacturing Company of Boston or Brighton?

A. I couldn't say whether the word Boston or Brighton was on it. I think Boston was on it, but I would not be certain.

C. Q. 74. Is your company the exclusive licensee under the Mége patent for any territory?

525 A. We are running under a license from the Commercial Manufacturing Company, Consolidated, of New York. We a ve an exclusive license for Massachusetts.

C. Q. 75. How long have you been making oleomargarine oil under that license?

A. I think it will be five years this fall.

REUBEN U. REED.

Subscribed and sworn to before me this 8th day of October, 1883.

PIERCE J. QUINN,
Notary Public, 3, *N. Y. Co.*

(Mr. Offield, of complainants' counsel, here offers to call and ex-

amine Mr. Merrill and Mr. Pendleton (mentioned in Mr. Reed's deposition above about as having knowledge of Mr. Reed's two experiments of September, 1885) in corroboration of the testimony of Mr. Reed; but for the purpose of saving time defendant's counsel admits that said Merrill and Pendleton if called as witnesses will give substantially the same testimony that Mr. Reed has given. Defendant's counsel, however, objects to it, as to Mr. Reed's testimony, on the ground that it is irrelevant, immaterial, incompetent, and not rebutting evidence. It is admitted that the testimony of Mr. Reed may be read as being also the testimony of Messrs. Merrill and Pendleton, subject to the above objection.)

Recess.

And thereupon complainants called as a witness in their behalf JAMES M. KIRBY, who, being first duly sworn to state the truth, the whole truth, and nothing but the truth, deposes as follows in answer to interrogatories propounded by said C. K. OFFIELD, Esq.:

Q. 1. Please state your name, age, residence, and occupation.

A. James M. Kirby; age, twenty-five years; residence, 326 West 47th street, New York city; occupation, book-keeper.

526 Q. 2. Were you ever in the employment of the corporation complainant herein, The Commercial Manufacturing Company, Consolidated; and, if so, at what place, during what period of time, and in what capacity?

A. I was; at 643 West 48th street, New York, from 1876 until July, 1884, in the capacity of assistant book-keeper, and from 1879 to July, 1884, as book-keeper.

Q. 3. Do you know Mr. Gilbert A. Peck, who formerly worked for that company; and, if so, where and during what period of time did he so work?

A. I do; he worked at 643 West 48th street. He worked there from the latter part of January, 1876, until December 12, 1881.

Q. 4. What work did he do around the establishment of the complainant at that time.

A. Well, he was an assistant to his father while in the factory, but principally he was outside looking after sundry matter, making purchase of supplies.

Q. 5. Who paid him for his services around that establishment?

A. The Commercial Manufacturing Company, Consolidated.

Q. 6. After the Turbers became the financial agents of the company—receiving its product and advancing its expenses—where or from whom did Mr. Peck and all the rest of the employees of the company receive their money?

A. From H. K. and F. B. Thurber & Company.

Q. 7. Did Mr. Peck ever claim to be in the employment of either of the Thurbers or to receive any money from them except as any other employee in the manner stated?

(Objected to as leading, incompetent, and not in rebuttal, Mr. Peck not having stated in his evidence that he ever made any declaration to this witness or in his hearing on the subject.)

A. No.

Q. 8. Did Mr. Peck leave the employment of the company of his own volition, or was he discharged?

(Objected to, except as to matters within the witness' personal knowledge, as calling for hearsay.

A. He way discharged.

527 Q. 9. At what time did the Thurbers begin to receive the entire product of the business and advance its running expenses?

A. In 1879, about the first of June, I think.

Cross-examination by Judge HILL:

(Without waiving any of the objections above noted, defendant's counsel cross-examines *de bene esse*.)

C. Q. 10. Do you understand that the obligation of your oath requires you to testify only to matters within your own personal knowledge and not to what others may have told you?

A. I do.

C. Q. 11. What do you know of Mr. Peck's discharge—of your own personal knowledge?

A. Mr. Peck himself told me he was discharged.

C. Q. 12. Is that all you know about it?

A. That is all I know about it.

C. Q. 13. When did he tell you that?

A. The night of the 12th of December, 1881.

C. Q. 14. Mr. Peck has testified in this case to the effect that about two months before that date he himself requested to be discharged. You do not know but that statement is true, do you?

A. I do not.

Redirect examination by C. K. OFFIELD, Esq.:

Q. 15. What was the language substantially used by Mr. Peck in speaking of his discharge to you?

(Objected to as immaterial and irrelevant, and also as not in the line of proper redirect examination.)

A. As near as I can remember, "The jig is up," or words to that effect. "I have got to go."

JAMES M. KIRBY.

Subscribed and sworn to before me this 8th day of September, 1885.

[SEAL.] PIERCE J. QUINN,
Notary Public (3), *N. Y. Co.*

Complainants rest.

528 COMPLAINANTS' EXHIBIT No. 2.

This is to certify that we, the undersigned, Briggs Swift, Joseph H. Rogers, John Dickson, Timothy D. Lincoln, and James D. Lehmer, have associated ourselves together to form an incorporated company, under the laws of Ohio, for the purpose of engaging in the business of manufacturing from and by the treatment of animal fats under the patented process of Hypolite Mege the articles and things following, viz: Oleomargarine, butterine, butter, butter oils, stearine, glycerine, pure beef fat, and the derivations that may be obtainable from animal fats in such manufacture and all such other articles and things as are incidental products of or naturally connected with such manufacturing business; and we do further certify—

First. That the capital stock of said manufacturing company shall be six hundred thousand dollars, and that said capital stock
529 shall be divided into six thousand shares of one hundred dollars each.

Second. That the principal office of said company shall be located at Cincinnati, in Hamilton county, Ohio, and the principal factory and place of business for the manufacture of the articles aforesaid shall be located at Chicago, in Cook county, Illinois.

Third. That the name and style by which the said manufacturing establishment shall be known shall be "The National Dairy Company."

Fourth. That the annual election of directors shall take place at the office of the company, in Cincinnati, on the second Thursday of January in each year.

In testimony whereof we have hereunto set our hands and seals this 6th day of December, 1879, at the city of Cincinnati aforesaid.

BRIGGS SWIFT. [SEAL.]
JOSEPH H. ROGERS. [SEAL.]
JOHN DICKSON. [SEAL.]
TIMOTHY D. LINCOLN. [SEAL.]
530 JAMES D. LEHMER. [SEAL.]

STATE OF OHIO, }
County of Hamilton, } *ss:*

Be it remembered that on this the 6 day of December, 1879, before me, the subscriber, a justice of the peace for Cincinnati township, in the county aforesaid, personally appeared the said Briggs Swift, Joseph H. Rogers, John Dickson, Timothy D. Lincoln, and James D. Lehmer, whose names are signed to the foregoing certificate of incorporation, and severally acknowledged the signing and sealing thereof to be their voluntary act and deed for the uses and purposes therein mentioned.

In testimony whereof I have hereunto set my hand and seal at Cincinnati the day and year last aforesaid.

E. GILLIGAN, [SEAL.]
Justice of the Peace, Cincinnati Township, Hamilton Co., Ohio.

STATE OF OHIO, *Hamilton County,* } *ssct:*

I, Lewis G. Bernard, clerk of the court of common pleas within and for said county of Hamilton, do hereby certify that
531 E. Gilligan, whose name is signed to the certificate hereto attached, was at the time of subscribing the same a legally acting justice of the peace in and for said county of Hamilton, duly elected, commissioned, and qualified, and that I am well acquainted with his handwriting and verily believe his signature thereto to be genuine, and that he is authorized to take the depositions of witnesses, acknowledgments of deeds, etc.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at Cincinnati this 6th day of December, A. D. 1879.

[SEAL.] LEWIS G. BERNARD,
Clerk H. C. C. P., O.,
By EMIL HOFFMAN, *Deputy.*

UNITED STATES OF AMERICA, *Ohio:*

OFFICE OF THE SECRETARY OF STATE.

I, Milton Barnes, secretary of state of the State of Ohio, do hereby certify that the foregoing is a true copy of the certificate of incorporation of the National Dairy Company, filed in this office
532 on the 8th day of December, A. D. 1879, and recorded in volume 18, pages 606, &c., of the records of incorporations.

In testimony whereof I have hereunto subscribed my
[SEAL.] name and affixed the great seal of the State of Ohio, at Columbus, the 8th day of December, A. D. 1879.

MILTON BARNES,
Secretary of State.

Endorsed: Received Dec'r 9, 1879. Recorded in Ham. Co., Ohio, Church Record Book, No. 4, page 596. Frank Bruner, recorder.

533 COMPLAINANTS' EXHIBIT No. 1. Frederick F. Goodwin, Notary Public.

STATE OF NEW YORK, *City and County of New York,* } *ss:*

We, William Remsen, Charles M. Field, Daniel S. Appleton, Horace K. Thurber, Stephen R. Post, Joseph J. O'Donohue, J. Seaver Page, Albert H. Rogers, John W. Hughes, James D. Smith, Charles M. Stead, James McCarter, and James Wilson, all of the city and State of New York, do by these presents, pursuant to and in conformity with the act of the Legislature of the State of New York passed on the seventeenth day of Feb-uary one thousand eight hundred and forty-eight, entitled "An act to authorize the formation of corporations for manufacturing, mining, mechanical, or chemical purposes," and the several acts of the said Legislature amendatory

thereof, associate ourselves together and form a company un-
534 der the name and style of "Commercial Manufacturing Company, Consolidated," and the following are hereby declared to be the corporate name of the said company, the objects for which the company is formed, the amount of the capital stock of the said company, the number of shares of which the said capital stock of said company shall consist, the term of existence of the company, the number of trustees and their names, the names of those who shall manage the concerns of the said company for the first year, and the names of the city and county in which the operations of the said company are to be carried on:

1. The corporate name of the said company is hereby declared to be "The Commercial Manufacturing Company, Consolidated."

2. The objects for which the company is formed are as follows: The manufacture, preparation, and sale of oleomargarine or oil of butter, butter, stearine, paraffine, and other products from suet and animal fats under the patent or patents formerly owned by
535 the United States Dairy Company of the city and State of New York and now owned by this company; also the manufacture of soap and candles, and generally the manufacture, improvement, preparation, and sale of any and all other articles, products, and commodities of what name or nature soever which may be made, prepared, improved, produced, or sold with or by or in or by combination with stearine or paraffine or animal or vegetable oils or fats or any product derived or derivable from suet or animal fat under the said patents or otherwise; also the purchase and owning of factories, premises, machinery, and property suitable and necessary for the carrying on of the buisness of this company; also the making of licenses to manufacture or sell products manufactured under said patent or patents and collecting of royalties thereunder; also the holding, enforcement, and enjoyment of all the rights of said United States Dairy Company and of the Commercial Manufacturing Company which may be acquired
536 by this company, whether under licenses issued by those companies or either of them or agreements made with them or otherwise.

3. The capital stock of the said company shall be ten million dollars, which shall be divided into one hundred thousand shares of one hundred dollars each.

4. The said company shall commence on the first day of May, in the year one thousand eight hundred and eighty, and shall continue in existence for the term of fifty years.

5. The number of trustees shall be thirteen. Their names are William Remsen, Charles M. Field, Daniel S. Appleton, Horace K. Thurber, Stephen R. Post, Joseph J. O'Donohue, J. Seaver Page, Albert H. Rogers, John W. Huges, James D. Smith, Charles M. Stead, James McCarter, and James Wilson.

The names of those who shall manage the concerns of the said company for the first year are William Remsen, Charles M. Field, Daniel S. Appleton, Horace K. Thurber, Stephen R. Post,
537 Joseph J. O'Donohue, J. Seaver Page, Albert H. Rogers, John

W. Hughes, James D. Smith, Charles M. Stead, James McCarter, and James Wilson before named.

6. The name of the city and county in which the operations of the said company are to be carried on in this State is the city and county of New York, in which city and county the principal business and operations of said company will be carried on.

The said company is formed for the purpose of carrying on some part of its business out of the State of New York, to wit, in each of the other States and Territories of the United States, at such places therein as may be deemed advisable, and, among others, at Philadelphia, in the State of Pennsylvania; Baltimore, in the State of Maryland; Cincinnati, in the State of Ohio; Louisville, in the State of Kentucky; St. Louis, in the State of Missouri; and Chicago, in the State of Illinois; but nevertheless the principal office and business operations of the company will be kept and carried on in the
538 said city of New York.

Witness our hands this twentieth day of April, 1880.

WILLIAM REMSEN.
CHAS. M. FIELD.
DAN'L S. APPLETON.
HORACE K. THURBER.
STEPHEN R. POST.
JOSEPH J. O'DONOHUE.
J. SEAVER PAGE.
A. H. ROGERS.
JOHN W. HUGHES.
JAMES D. SMITH.
CHARLES M. STEAD.
JAMES McCARTER.
JAMES WILSON.

STATE OF NEW YORK, } ss:
City and County of New York, }

On the twentieth day of April, A. D. 1880, personally appeared before me William Remsen, Chas. M. Field, and Dan'l S. Appleton and on the thirtieth day of April, A. D. 1880, also personally appeared before me Horace K. Thurber, Stephen G. Post, Joseph J. O'Donohue, J. Seaver Page, A. H. Rogers, John W. Hughes, James D. Smith, Charles M. Stead, James Wilson, and James McCar-
539 ter, to me known and known to me to be the individuals described in and who executed the foregoing instrument, who made, signed, and acknowledged the same before me and severally acknowledged that they executed the same.

[SEAL.] EDW'D B. DICKINSON,
Not. Pub., K'gs Co., C'f. N. Y. Co.

STATE OF NEW YORK, } ss:
City and County of New York, }

I, William A. Butler, clerk of the city and county of New York and also clerk of the supreme court for the said city and county, the same being a court of record, do hereby certify that Edw. B. Dick-

inson has filed in the clerk's office of the county of New York a certified copy of his appointment as notary public for the county of Kings, with his autograph signature, and was at the time of taking the proof or acknowledgment of the annexed instrument duly authorized to take the same.

And further that I am well acquainted with the handwrit-
540 ing of such notary and verily believe that the signature to the said certificate of proof or acknowledgment is genuine.

I further certify that said instrument is executed and acknowledged according to the law of the State of New York.

In testimony whereof I have hereunto set my hand and affixed the seal of the said court and county the 30 day of April, 1880.

[SEAL.] WM. A. BUTLER, *Clerk.*

(Endorsed:) The Commercial Manufacturing Company, Consolidated. Certificate of incorporation. May 1, 1880. State of New York, office of the secretary of state. Filed May 1, 1880. Anson S. Wood, deputy secretary of state.

STATE OF NEW YORK, *ss:*

OFFICE OF THE SECRETARY OF STATE.

I have compared the preceding with the original certificate of in-
corporation of "Commercial Manufacturing Company, Con-
541 solidated," with acknowledgment thereto annexed, filed and recorded in this office on the 1st day of May, 1880, and do hereby certify the same to be a correct transcript therefrom and of the whole of the said original.

Witness my hand and the seal of office of the secretary
[SEAL.] of state, at the city of Albany, this 19th day of Feb-uary, one thousand eight hundred and eighty-three.

JOSEPH B. CARR,
Secretary of State.

(Endorsed:) Filed Jan'y 12, 1886. Wm. H. Bradley, clerk.

542 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Chancery.

Stipulation.

It is hereby stipulated by and between the parties to the
543 above-entitled cause, represented by their respective counsel, and for the purpose of expediting the preparation and hearing of the above cause, as follows:

That the defendant in its factory first runs the fresh beef fat, which has been packed with ice during the preceding night, through a hasher, where it is thoroughly hashed and is comminuted, and then melts the hashed fat in a jacketed kettle at a temperature rang-

ing from one hundred and twenty degrees to one hundred and thirty degrees Fahrenheit, the fat being thoroughly agitated by mechanical stirrers while melting, and salt being mixed with the fat while it enters the kettles, and then, when settled, the melted fat is drawn off into other kettles, when the temperature is raised above five degrees and maintained about three hours, when the fat is put into seeders, which are kept in a room at a temperature of eighty-four to eighty-six degrees, until it granulates and thickens, then the stock is put into cloths holding three pounds each, in a flat cake seven by ten inches and one inch thick. Eight of these are placed on an iron plate, and then an iron plate in alternation to seventy-five rows of cakes and plates, and put into a press. Then the oil is squeezed out by a pressure in the press and runs into a tank, from which it is pumped through pipes into a kettle in the same room and temperature, where it remains several hours and is run into tierces.

This stipulation does not prevent the consideration or introduction of evidence by either party relating to the subject-matter thereof not consistent with the contents hereof.

That the complainants are to finish and complete at once and at this sitting in New York all their testimony, *prima facie*, and
544 that the defendant is to use its best effort and endeavors to put in and complete its rebuttal within sixty days hereafter.

OFFIELD & TOWLE,
Compl'ts' Sol'rs.

HILL & DIXON.
Def't's Sol'rs.

New York, November 21st, 1883.

545 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Chancery.

Notice.

GENTLEMEN: Please take notice that we shall proceed to take testimony of George F. Barker and other witnesses in behalf of the defendant in the above-entitled cause on Wednesday, the 23rd day of July, A. D. 1884, at 2 o'clock p. m., before Edwin L. Thurston, Esq., a notary public, at his office, room 27, No. 53 Dearborn street, in the city of Chicago, Illinois. You are invited to attend and cross-examine said witnesses if you so desire.

Respectfully,
HILL & DIXON,
Sol'rs for Def't.

To Messrs. Offield & Towle, solicitors for complainants.

We hereby admit service of the above notice, by copy, this 22nd day of June, 1884.

OFFIELD & TOWLE,
Complainants' Solicitors.

546 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

Met at my office, room 27, No. 53 Dearborn street, Chicago, Illinois, this 23rd day of July, A. D. 1884, at 2 o'clock p. m., pursuant to the notice hereto attached, to take proofs in behalf of the defendant in the above-entitled cause, before me, Edwin L. Thurston, a notary public in and for the county of Cook and State of Illinois.

Present: C. K. Offield, Esq., of Offield & Towle, on the part of the complainants, and T. S. E. Dixon, Esq., of Hill & Dixon, on the part of the defendant.

Whereupon the following proceedings were had before me:

Counsel for defendant here offers in evidence a duly certified copy of the file wrapper and contents in the matter of the letters patent granted to Hippolyte Mege, Dec. 30, 1873, No. 146,012, for improvement in treating animal fats, including a copy of said original letters patent, and requests the notary to mark the same for identification "Defendant's Exhibit File Wrapper and Contents and Specification of Original Mege's Patent."

547 Also a duly certified copy of the file wrapper and contents in the matter of the reissued letters patent granted to Hippolyte Mege, assignor to the United States Dairy Company, May 12, 1874, No. 5868, for improvement in treating animals fats, including a copy of said reissued patent, and requests the notary to mark the same "Defendant's Exhibit File Wrapper and Contents and Copy of First Reissued Mege Patent."

Complainants' counsel objects to the introduction of this exhibit as incompetent, irrelevant, and immaterial.

Counsel for defendant also offers in evidence a duly certified copy of the file wrapper and contents in the matter of the reissued letters patent granted to Hippolyte Mege, assignor to the United States Dairy Company, Sept. 24, 1878, No. 8424, for improvement in treating animal fats, including a copy of said reissued patent, and requests the notary to mark the same "Defendant's Exhibit File Wrapper and Contents and Copy Second Reissued Mege Patent."

Complainants' counsel's last objection repeated.

Counsel for defendant also offers in evidence a duly certified copy of the file wrapper and contents in the matter of the reissued letters patent granted to the Commercial Manufacturing Company, Consolidated, assignee of Hippolyte Mege, June 13, 1882, No. 10137, for improvement in treating animal fats, including a copy of said

548 reissued patent, and requests the notary to mark the same "Defendant's Exhibit File Wrapper and Contents and Copy of Third Reissued Mege Patent."

Counsel for complainants repeats last objection.

Counsel for defendant also offers in evidence a printed copy of

the rules of practice of the U. S. Patent Office for 1873, and in particular rule 90 thereof, which reads as follows: "90. When application is made for a patent for an invention which has been already patented abroad the inventor will be required to make oath that, according to the best of his knowledge and belief, the same has not been in public use in the United States for more than two years prior to the application in this country," and requests the notary to mark the same "Defendant's Exhibit Patent Office Rules."

Last objection repeated by counsel for complainants.

Counsel for defendant also offers in evidence duly certified copy of French letters patent, dated July 15, 1859, granted to Hippolyte Mege for the production of certain fatty bodies of animal origin, patent No. 86480, and requests the notary to mark the same for identification "Defendant's Exhibit Mege French Patent."

Complainants' counsel objects to the introduction of this exhibit as incompetent, irrelevant, and immaterial.

Counsel for defendant also offers in evidence duly certified
549 copy of English letters patent granted to Hippolyte Mege, dated July 17, 1869, No 2157, for producing fatty bodies, and requests the notary to mark the same for identification "Defendant's Exhibit Mege English Patent."

Last objection repeated by counsel for complainants.

Counsel for defendant also offers in evidence duly certified copy of Bavarian letters patent, granted to Hippolyte Mege April 8, 1873, No. 1074, together with the certificate of authentication, prolongation, and expiration, and requests the notary to mark the same "Defendant's Exhibit Mege Bavarian Patent."

Complainants' counsel objects to the introduction of this exhibit as incompetent, irrelevant, and immaterial, it being understood, however, that under this objection the regularity or sufficiency of the certificate of identification is not questioned.

Counsel for defendant reserves the right to remove any defects or insufficiencies in the foreign patents here offered in evidence by filing additional documents before the hearing.

Counsel for defendant also offers in evidence a duly certified copy of Austrian letters patent, dated Oct. 31, 1869, granted to Hippolyte Mege for the production of pure fats of animal origin, and requests the notary to mark the same "Defendant's Exhibit Mege Austrian Patent."

550 Complainants' counsel objects to the introduction of this exhibit as incompetent, irrelevant, and immaterial.

HENRY GRADLE, a witness of lawful age, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testifies in answer to interrogatories propounded by counsel for defendant as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Henry Gradle; 29 years; 555 N. Clark street; physician; office, Music Hall building, Chicago.

Q. 2. Have you occupied any official position in any institution in this city?

A. Yes. Professor of physiology in the Chicago Medical College.

Q. 3. Are you familiar with the French and German languages; and, if so, to what extent, with reference to their translation into English?

A. German is my native language, and French I have acquired by reading and a residence in Paris.

Q. 4. Please examine the exhibit marked "Defendant's Exhibit Mege French Patent" and state whether you have read and understand the same, and, if so, whether you have translated the same into English.

A. Yes.

Witness hands counsel for defendant a translation.

Q. 5. Please state whether or not the paper just produced
551 by you is a correct and accurate translation of the exhibit marked "Defendant's Exhibit Mege French Patent."

A. Yes, sir.

Counsel for defendant here offers in evidence the said translation and requests the notary to mark the same "Defendant's Exhibit Translation Mege French Patent."

Complainants' counsel objects to the introduction of this exhibit as incompetent, irrelevant, and immaterial, and for the further reason that no foundation has been laid for the introduction of this paper.

Q. 6. Please examine the exhibit marked "Defendant's Exhibit Mege Bavarian Patent" and state whether or not you have read and understand the same.

A. Yes.

Q. 7. Have you made a translation of the same into English?

A. Yes.

Witness hands counsel for defendant a translation.

Q. 8. Please state whether or not the paper produced by you is a correct and accurate translation of the exhibit marked "Defendant's Exhibit Mege Bavarian Patent."

A. Yes.

Counsel for defendant here offers in evidence the said translation and requests the notary to mark the same "Defendant's Exhibit Translation Mege Bavarian Patent."

Complainants' counsel repeats last objection.

Q. 9. Please examine the exhibit marked "Defendant's
552 Exhibit Mege Austrian Patent" and state whether you have read and understand the same; and, if so, whether you have translated the same into English.

A. Yes.

Witness hands to counsel for defendant a translation.

Q. 10. Please state whether or not the paper produced by you is

a correct and accurate translation of the exhibit marked "Defendant's Exhibit Mege Austrian Patent."

A. Yes.

Counsel for defendant here offers in evidence the said translation and requests the notary to mark the same "Defendant's Exhibit Translation Austrian Patent."

An adjournment was here taken to Thursday, July 24, at 9.45 o'clock a. m.

THURSDAY, *July 24th*, 1884—10 o'clock a. m.

Met pursuant to adjournment.

Present: As before.

Cross-examination by Mr. OFFIELD:

C. Q. 11. How long have you resided in this country continuously?

A. With the exception of short travels, since 1864. That, of course, excludes the time I spent abroad.

C. Q. 12. What portion of that time since 1864 did you spend abroad? And identify the time.

A. Summer of 1860 to fall of 1871—fall 1875 to fall of 1877.

C. Q. 13. How long have you been a practicing physician?

A. In active practice since fall 1877.

553 C. Q. 14. Did any person assist you in the translation of the three patents which you have testified to and which have been introduced in evidence in your deposition, both patents and translation?

A. No.

C. Q. 15. Was it necessary for you in your translation to consult any authorities of any description?

A. I looked up a few commercial French terms.

C. Q. 16. What dictionary did you use in this consultation?

A. I did not look at the title. It seemed to be a standard work.

C. Q. 17. Had you ever seen the work which you consulted before or since?

A. I can't say, because I didn't look at the title.

C. Q. 18. I figure from your testimony that you came to this country when you were 9 years old. Please state where you came from and what language you then spoke.

A. I lived in Frankfort-on-the-Main until I was nearly 9 years of age, and spoke German.

C. Q. 19. Are you a graduate from any of the German universities? And, if so, please identify them.

A. No.

C. Q. 20. Are you a graduate from any of the schools in Paris or France? And, if so, please identify them.

A. No.

C. Q. 21. Where did you receive your diploma as a practicing physician?

A. From the Chicago Medical College, in 1874.

C. Q. 22. Had you, at any time after you came to this
554 country, forgotten what you knew of the German language when you came here?

A. No.

C. Q. 23. For how long were you a professor of physiology in the Chicago Medical College?

A. Since 1878.

Redirect examination by Mr. DIXON:

R. D. Q. 24. Previous to your call to the professorship of physiology in the Chicago Medical College had you attended any of the German universities?

A. Yes. Vienna, Heidelberg, and Leipsig.

R. D. Q. 25. How much time did you spend attending these universities?

A. About a year and three-quarters.

R. D. Q. 26. Since that period what occasion have you had, both in your professorship and in your practice, to keep up the German language?

A. Speaking and reading it nearly every day.

R. D. Q. 27. State the circumstances which have occasioned this continued familiarity with the language.

A. Having many German patients, and using my library, which is mainly German.

R. D. Q. 28. State whether or not, in the preparation of your lectures as professor, you have had frequent occasion to read and translate for your own use French and German books and writing.

Objected to as incompetent, or, if competent at all, relevant only as direct examination.

A. Yes.

555 Recross examination:

R. C. Q. 29. How much of the last 20 years have you lived in this city?

A. The whole time, except about 3½ years.

R. C. Q. 30. This German which you say you speak every day, is this North Side German, which they speak west of Clark street, in this city?

A. I fail to understand the significance of the question.

R. C. Q. 31. This professorship in the Chicago Medical College is a supposed honorary one, where the incumbent gets no pay, is it not?

A. There is no regular salary; only the division of dividends.

R. C. Q. 32. How long has it been since that institution made a dividend, and about what was the size of it?

Objected to by counsel for defendant as wholly incompetent, and also as improper recross-examination.

A. The last annual dividend, of $120, was paid two years ago.

On looking over the translation of the Austrian patent I find that I have written "fresh" by a slip of the pen where it should be unmistakably "finest," and I request that the translation be corrected.

Notary here makes the desired correction.

DR. H. GRADLE.

Subscribed and sworn to before me this 24th day of July, 1884.

EDWIN L. THURSTON,
Notary Public.

Recess until 2 o'clock p. m.

556 2 O'CLOCK P. M.

Present: As before.

GEORGE F. BARKER, a witness of lawful age, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified, in answer to questions propounded by counsel for defendant, as follows:

Q. 1. What is your name, age, residence, and occupation?

A. George F. Barker; residence, Philadelphia; professor of physics, University of Pennsylvania; age, 49 years.

Q. 2. What experience, if any, have you had which would tend to qualify you to testify as an expert in patent causes, especially those involving chemical and physiological questions?

A. I was graduated in 1858 from the scientific school of Yale College, and in 1863 from the Albany Medical College; have held the professorship of chemistry at Wheaton, Illinois, in the Albany Medical College, and Western University of Pennsylvania—professorship of physiological chemistry and toxicology in the medical department of Yale College from 1867 to 1873; the professorship of physics in the University of Pennsylvania since that time. I am the author of a text-book on chemistry, published in 1870, which has been used in Yale College, University of Pennsylvania, Columbia College, and in many other leading medical and literary colleges. I am chemical editor of the American Journal of Science and a member of the National Academy of Sciences, and have been president of the American Association for the Advancement of Science.

557 I represented the United States at the Paris Electric Exhibition, and was a delegate to the International Congress of Electricians, and was vice-president of the jury and chairman of the experimental commissions on incandescent electric light. I have just been appointed by the President of the United States one of the commission to the electric exhibition at Philadelphia.

I have been frequently employed as an expert in patent causes involving chemical, physical, and physiological questions—as, for example, the noted Alizarine suit and the so-called Horsford Bread suit, in which physiological value of the phosphates as nutritive agents was involved; I also testified as an expert for the defendants in a suit brought by the Western Union against the American

Union for infringement of the Page patent. I have also testified in criminal cases, particularly in reference to toxicological questions.

Q. 3. Please examine reissued letters patent No. 10137, dated June 13, 1882, granted to the Commercial Manufacturing Company, Consolidated, assignee of Hippolyte Mege, and state whether you understand the same and the invention therein set forth.

A. I have carefully examined the said patent and believe I understand the same and the invention therein set forth.

Q. 4. What do you understand to be the invention of Hippolyte Mege, described and embodied in that patent?

A. The patent itself calls it "an improved means for transforming animal fat into butter," and states that "this invention, which is the result of physiological investigation, consists of artificially producing the natural work which is performed by the cow
558 when it re-absorbs its fat in order to transform the same into butter." In my judgement, therefore, the invention of Mege consists solely in devising an artificial process for producing the same product which is naturally performed by the cow in the production of natural butter within her organism. In Mege's opinion, this process was essentially a digestive process, and hence the digestion process described in said patent constitutes the peculiar feature of his invention.

Q. 5. There are other steps directed by Mege in his patent to be used in connection with the concentrated digestion, such as washing and crushing the fat, crystallization in a mass, and separation of the stearine. Are these other steps or any of them physiological in their character or are they mechanical, and from your knowledge as to the state of the art what can you say as to their novelty?

A. According to my understanding of the patent, the invention of Mege consists solely in the physiological process which he calls in that patent "concentrated digestion." The other steps referred to are entirely subordinate in importance, and are for the most part perfectly obvious applications for well-known purposes, and have been, for the most part, repeatedly practiced in the arts before Mege made his invention. The first step mentioned is called "neutralization of the ferments," the raw fats being for this purpose plunged into an antiseptic solution containing salt and a small proportion of sodium sulphite, for from one to twelve hours. It is well known that the rapid decomposition of the blood and membranes accompanying the fat as it is taken from the animal gives, by their fermentation, a bad odor to the resulting product. If the fats are cleaned and treated at once the odor may be avoided without
559 the use of antiferments, but as it is frequently necessary, upon a manufacturing scale, to delay the treatment, antiferments must be added either in the shape of a low temperature or antiseptics. Salt is a well-known antiseptic and so is sulphite of sodium. The first step has for its object, therefore, only to prevent the fats from contamination by decomposition, and is not essential, provided the fats be treated at once. The second step, entitled "crushing," is an obvious requirement, and had been long in use in the arts for similar purposes. Comminution facilitates treatment

because it increases the surface to be acted upon. The third step of "concentrated digestion" constitutes, as has been said, Mege's invention, taken in connection with the other steps of the patent. The fourth step, called "crystallization in a mass," and the fifth, "separation by centrifugal force," were also well known in the arts for accomplishing similar purpose, namely, the separation of the more liquid from the less liquid of the fats, prior to the invention of Mege.

The other steps of the patent are therefore not physiological, but are essentially mechanical and collateral.

Q. 6. What are the conditions Mege prescribes in the patent under which this artificial or concentrated digestion is to be conducted?

A. The conditions required in the third section, entitled concentrated digestion, are entirely consonant with the statement of Mege that his invention consists in artificially producing the natural work which is performed by the cow when it re-absorbs its fat in order to transform the same into butter. The process he terms artificial digestion. He prepares a gastric juice by macerating half the stomach of a pig or a sheep (well washed) in three litres of
560 water containing 30 grains of biphosphate of lime for three hours and then strains. For every 100 kilograms of fat already finely crushed he uses two litres of the artificial gastric juice thus prepared. The temperature of the mass is then slowly raised "so that the heat does not exceed 103° Fahrenheit," and kept at this temperature "so that the matter shall completely separate." The process of digestion, as is well known, consists in the action of the peculiar fluid of the stomach termed gastric juice upon the fibrinous and albuminous tissues of the food. This action is attributed to the presence in the gastric juice of a special ferment called pepsin, which has no appreciable action upon the fatty or starchy matters of the food, but acts upon the fibrinous and albuminous tissues to render them soluble by converting them into soluble peptones and insoluble para-peptones. For the proper action of this ferment the solution must be acid and the temperature preserved at or near 100° Fahrenheit, which is the average temperature of the animal body, the ferment becoming inactive at lower temperatures and being entirely destroyed at temperatures not very much higher. Natural digestion in the stomach, therefore, by dissolving the membranes constituting the walls of the fat cells sets free the contained fat, and this, as I understand it, is the precise function of the artificial digestion described in the third section. Care is taken not to exceed 103° Fahrenheit in the process, evidently because it was well known to Mege that the gastric juice had its maximum action at or about this temperature.

Q. 7. What does Mege say is the effect produced upon the fat thus treated in artificial digestion as to the taste thereof.

561 A. Mege says of his product, "This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter." It would seem, therefore, that the artificial digestive process employed by him did result in the production of a substance having the taste of butter; so that the product as well

as the process sustained his physiological theory of the similarity of the action in the two cases—*i. e.*, the natural and artificial processes.

Q. 8. I call your attention severally to Mege's English patent in the exhibit marked "Defendant's Exhibit Mege English Patent," and to Mege's French patent in exhibit marked "Defendant's Exhibit Mege French Patent," and to Mege's Bavarian patent in the exhibit marked "Defendant's Exhibit Mege Bavarian Patent," and to Mege Austrian patent in the exhibit marked "Defendant's Exhibit Mege's Austrian Patent," and to the translations of said French, Bavarian, and Austrian patents, exhibits in this case, and ask you whether you have examined said several patents and translations and understand the same.

A. I have examined the said several patents referred to and the translations of the same and believe that I understand them.

Q. 9. Please compare said American Mege patent, reissued letters patent No. 10137, with the said several foreign patents and state what conclusions, if any, you arrive at in making such comparison.

A. I have compared the said patents together, and in my opinion they are essentially for the same invention. So far as my knowledge goes Mege made but one invention—*i. e.*, the artificial production of butter from fat by producing the natural work produced by the cow when it re-absorbs its fat in order to transform the same into butter. This, therefore, constituted the essential feature of the inventor—of Mege—as described in all the patents referred to. In this view of the case I am supported by the authority of Mege himself, who says in his affidavit accompanying this original application for United States letters patent, and shown in the exhibit marked "Defendant's Exhibit File Wrapper and Contents and Specification Original Mege Patent," as follows:

562

REPUBLIC OF FRANCE, }
City of Paris, } *ss:*

I, Hippolyte Mege, being duly sworn, do depose and say that I am a citizen of France; that I am the inventor of the improvement in transforming animal fats into butter above referred to; that French letters patent were duly issued to me therefor on the 15th day of July, 1869; that I have caused the above application to be made for the issuance of letters patent of the United States for the said improvement, and that according to the best of my knowledge and belief the said invention and improvement has not been in public use in the United States for more than two years prior to the filing of my said application in the Patent Office of the United States for letters patent of the United States for the said improvement. I make this statement conscientiously, believing the same to be true, and by virtue of the provisions of section 25 of the act of Congress of July 8, 1870, entitled "An act to revise, consolidate, and amend the statutes relating to patents and copyrights," and of rule 90 of the said Patent Office.

H. MEGE.

563 Sworn to before me this 28th day of November, 1873.
JOHN MEREDITH READ, JR.,
U. S. Consul General.

For example, the essential feature of his invention is described in the French patent as follows (I quote from the translation): "Artificial digestion.—This fat, from which all soluble animal matters have been removed, is mixed with artificial gastric juice (infusion of a pig's stomach in acidulated water) in sufficient quantity to immerse it, and the whole is kept at the temperature of the animal body until all the molten fat appears as a clear layer upon the surface. It is allowed to settle, and the sediment is submitted to another operation in order to extract all the fat, which in this case has no longer the animal odor, but the taste of delicate fat." The product which is the final result of this process is thus described: "Another distinct product is obtained by this procedure destined to render great service to domestic economy, namely, the fatty body obtained as above, which consists, like butter, of margarine, oline, and a small amount of volatile oil. This fatty body, while pure, and has undergone no change by heat and chemical agents, is the fat which the cow reabsorbs in its organism to pass it through the milk gland. After this passage the fat is scarcely changed and becomes the variety of fat known as butter."

An adjournment was here taken to Friday, July 25, 1884, at 10 o'clock a. m.

FRIDAY, *July 25th*, 1884.

Met as per adjournment.
Present: As before.

564 Answer to question 9 resumed:

In the English patent the same feature is described as follows:

"Artificial digestion.—This fat, deprived of all soluble animal matters, is mixed with artificial gastric juice (infusion of a pig's stomach in acidulated water) in sufficient quantity to immerse it, and the whole is kept at the temperature of animal heat until all the dissolved fat appears limpid on the surface. It is left to deposit, and the deposit is submitted to a new operation to extract all the fatty body, which in this case has no smell of animal fat and all the odor of the most delicate fatty body." In regard to the product he says: "The combination of this process, with or without pressure, is naturally applicable to all suets (*graisses en branches*). Whatever suet be employed I obtain by this process a sort of white or slightly yellow lard of absolute purity and having an almond odor, hitherto unknown in animal fats." He goes on: "There is, besides, obtained by this process a distinct product destined to render great service in domestic economy. In fact, the fatty body obtained as above is composed, like butter, of margarine, oline, and a little odoriferous oil. It is this fatty body, when it is pure, and which has experienced no modification, either by heat or by chemical agents, which the cow

re-absorbs into her economy in order to pass it into her mammal. After this passage the above fatty body is in fact scarcely modified and becomes the variety of fat called butter." "It must not be forgotten that pure yellow fat obtained by the process above described is nothing but butter in its primitive state."

565 The same feature of Mege's invention I find described in the Austrian patent as follows (I quote from the translation) "Artificial digestion.—This fat, from which all soluble animal substances have been removed, is mixed with artificial gastric juice (maceration of a pig's stomach in acidulated water) in sufficient quantity to immerse it, and the mixture is kept at the temperature of the animal body until the fat appears in a clear layer on the surface. The mixture is allowed to settle, and the sediment is subjected to another operation in order to extract all fatty matter, which in this case has no longer the odor of animal fat, but the taste of the finest fat." The product of this process is thus referred to: "This entire procedure, with or without pressure, can be employed in the case of any fresh fat just taken from the animal. By means of the same I obtain partly solid, partly soft, white or faintly yellowish, perfectly pure fatty bodies, which have a faint flavor of almonds."

566 In the Bavarian patent the peculiar physiological feature of Mege's invention is thus described (I quote from the translation): "Artificial digestion.—This fat, now freed from all soluble animal substances, is mixed with artificial gastric juice (stomach of the pig or sheep in acidulated water) to the extent of immersing it completely, or to a thousand kils. of fat, 300 kils. of water, 100 kils. of bicarbonate of sodium, and two stomachs (pig or sheep) are added. This mixture is then kept at the temperature of the animal body (by means of steam-pipes or otherwise) until all the molten fat has been dissolved by the pepsin in the stomachs and appears in a clear layer on the surface. It is allowed to settle, and it is decanted and the process repeated in order to extract all the fatty constituents, which now have lost the odor of animal fat, but have obtained a particular taste." The product of this process is thus described: "The entire procedure, with or without pressure, can be applied to all crude fats. The white or faintly yellowish fat obtained by means of the described procedure is remarkably pure and has a taste of almonds, hitherto not known of any animal fat." "The pure fat, which has undergone no change by heat or chemical agents, is the same substance which the cow consumes in its organism in order to have it pass through the udder in the form of milk, fat, or butter. The fat is therefore but butter in its original form."

From the above quotations it appears that the description of the artificial physiological process required in order to transform animal fat into butter, which, in my opinion, is the novel feature of Mege's invention, is essentially the same in all these patents and does not differ materially from that given in the American patent. In all of them the process is called a process of digestion. In all of them gastric juice is made use of, obtained by macerating the stomach of a pig or sheep in acidulated water, the operation being con-

ducted at the temperature of the animal body as given in the foreign patents or at a temperature not exceeding 103° (which is essentially the same) in the American patent. The product, after pressing out the stearine, is a soft fat, slightly yellowish in color, with no taste or smell of animal fat, but with a special order, differently described in the different foreign patents, and which is composed, as is distinctly stated in the English patent and in the first American reissue, to be composed, like butter, of oleine, margarine, and a little odoriferous oil. In this first reissue of the American patent Mege states as follows: "The oleomargarine thus produced is free from any disagreeable taste or odor, and is suitable for various culi-
567 nary uses, and also for replacing olive oil in the manufacture of scraps, and also as a superior lubricator, etc. It is composed, like butter, of oliene, margarine, and a little odoriferous oil, and has not undergone any modification, either by excessive heat or chemical agents." In the present reissue he speaks of the product of his artificial physiological process as follows: "This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter." And again: "In all cases the oleomargarine is separated from the stearine when it is cold and passed to the cylinder, constituting, especially if its yellow color has been raised, a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of margarine."

In my opinion, therefore, the process of artificial digestion, which is the special distinguishing feature of Mege's invention, together with the product which is produced by this process, is described in substantially the same terms in the foreign and American patents specified.

With reference to the subordinate processes associated with the fundamental processes of artificial digestion, they may be divided into two classes: 1st, those which relate to cleansing and comminuting the fat; and, 2nd, those which have reference to the separation of the stearine. The first processes consist of essentially the same steps in all the patents, being as described in the first American reissue as follows: "The first step preparatory to the process of separation is to crush, grind, or disintegrate the fat by any suitable machinery, such as rollers or millstones, and to wash it by a stream of pure water, which may be poured on it while the act of disinte-
grating it is being performed, until it is as free as possible of
568 everything soluble or separable by water. The fat, being thus thoroughly cleaned and disintegrated, may be subjected to artificial digestion."

The second class of processes, which have for their object the separation of the stearine, may be divided into two stages, which are essentially the same in all the patents. These are, first, the stage of crystallization, and, second, the stage of expression. In the first the product obtained by the artificial digestion is maintained at a temperature at which the stearine solidifies. In the second the entire mass is placed in cloths and submitted to pressure, by which the liquid portions are expressed, the more solid stearine remaining in

the cloth. In the first American reissue this stage of the process is thus described: "In this condition the process of separating the oleomargarine from the stearine is to be performed. This is done either by packing the purified fat in sacks of woolen or cotton cloth and subjecting them to pressure in a press, or by the use of a centrifugal machine such as is used for drying sugar. The effect produced is that the oleomargarine practically separates from the stearine and flows out, leaving the stearine either in the sacks or in the centrifugal machine, as one or the other means are used."

In the present reissue this stage is thus referred to: In order to avoid the numerous inconveniences of the presses which have been hitherto used, he caused the mixture of stearine and oleomargarine to flow into a centrifugal machine called hydro-extractor. The greasy liquid passes through the cloth and the stearine is collected.

Both classes of these subordinate processes are, therefore, essentially equivalent, the one to the other, in all the patents under consideration. They are obvious applications of principles well known in the arts at the time of Mege's invention for accomplishing the purposes specified.

569 The other details of operation referred to in the patents are entirely collateral, and refer, for the most part, to the preparation of the product for the market.

For the reasons above given in detail, I conclude that the essential process which constitutes Mege's invention is the same in all these patents, so far as its special details are concerned, and that the product of this process is practically the same in them all.

An adjournment was here taken to Saturday, July 26, at 10 o'clock a. m.

Saturday, July 26, 1884.—An adjournment was here taken to Monday, July 28, 1884, at 10 o'clock a. m.

Monday, July 28, 1884, 10 o'clock a. m.—An adjournment was here taken to 2 o'clock p. m.

MONDAY, *July* 28—2 o'clock p. m.

Met as per adjournment.

Present: As before.

GEORGE F. BARKER resumes his answer to question No. 9:

By way of recapitulation I offer the following tabular comparison of these foreign and American patents. It will be observed that the first process in the American patent, called "neutralization of the ferments" (and here I would state that the terms given are in all cases the headings of sections in the patents themselves), is peculiar to the American patent, simply because it provides an antiseptic treatment where the fat is not at once used after the death of the animal. In the foreign patents the fat must be used at once to obtain a good quality of product. In the American patent the fats are washed with an antiseptic solution and then crushed.

570 In the foreign patents the processes of washing and crushing are included together in the first operation. The third oper-

ation, termed "pressure" in the French, English, and Austrian patents, includes the processes of cooling and crystallization, constituting the third operation of the Bavarian and the fourth of the American patent. The fifth process of the American patent, "separation of the stearine by centrifugal force," is simply an equivalent for the press employed in the other patents. The fourth, fifth, and sixth operations of the French, English, and Austrian patents and the fifth and sixth of the Bavarian have reference to the preparation of special qualities of the product, and are therefore not referred to in the American patent. These special qualities are especially applicable for (I quote from the translation of the French patent), "1st, alimentation, replacing fats and lard; 2d, the fabrication of toilet soaps of a superior quality; 3d, the fabrication of ordinary soaps to replace olive oil and get a larger yield; 4th, the lubrication of machinery.

The table is as follows:

French.	English.	Austrian.	Bavarian.	American.
				1st. Neutralizat'n of the ferment.
1st. Complete washing.	1st. Comp. washn.	1st. Perfect wash.	1st. Wash'g and crushing.	2d. Crushing.
2d. Artificial digestion.	2d. Art. digesti'n	2d. Art. digesti'n	2d. Art. Digesti'n	3d. Concentr't'd digestion.
3d. Pressure	3d. Pressure	3d. Pressure	3d. Cooling 4th. Pressure	4th. Crystaliz't'n in a mass. 5th. Separ't'n by centrifugal force.
4th. Uniform solidification.	4th. Regular solidificat'n.	4th. Uniform solidity.	5th. Uniformity and ductility.	
5th. Ductility	5th. Malleability	5th. Ductility.		
6th. Decolorization	6th. Decolorizat'n	6th. Decolorizat'n	6th. Decolorizat'n.	

572 Q. 10. Are you familiar with the process employed by the defendant and set forth in the stipulation between the parties, dated Nov. 21st, 1883?

A. I have read said stipulation, and am familiar with the processes employed by the defendant, as set forth in it.

Q. 11. Have you personally visited their factory and witnessed the operation?

A. I have.

Q. 12. Please compare said defendant's process with the process set forth in said Mege reissued patent, No. 10137, and state the conclusions at which you arrive in making said comparison and your reason for any opinion you may express.

A. In my opinion, the process of the defendant, as set forth in the stipulation referred to and as witnessed by me in operation at their factory, is an entirely distinct process in its theory and its practice from the process set forth in the Mege patents, which constitutes the novel feature in his invention. My opinion is based upon the following reasons:

1st. The process of the defendant makes use in the operation only of heat. 2d. The Mege patent makes use of a process termed "artificial digestion." These two processes are entirely distinct in their character, the process of Mege being practically inoperative at the temperature at which the process of the defendant is conducted. For example, in the process employed by the defendant the well-washed and finely divided fat is heated in a jacketed kettle, with constant agitation, up to a temperature varying from 120 to 130 degrees Fahrenheit. At this temperature the fatty matter is completely liquefied and separated from the membranes and cel-

573 lular tissue, which fall to the bottom of the vessel, their separation being facilitated by the addition of a small quantity of salt. The liquid fat is drawn off into other kettles at about the same or a little higher temperature, where a still further clarification takes place. When this operation is finished the fat is run into the coolers and allowed to remain at a temperature at which the more solid stearine will separate by crystallization; the separation of the stearine from the still liquid oil is then effected by placing the mass in cloths and submitting it to pressure. The sole agent employed in this process, therefore, is heat, and this agent has been in use for many years for accomplishing this result.

In the Mege process, on the other hand, the use of temperature at all above that of the animal temperature is expressly prohibited. Mege himself lays great stress upon the fact that his process is essentially a physiological one and imitates artificially "the natural work that is performed by the cow." An artificial gastric juice is prepared and the finely divided fat is submitted to its action "so that the heat does not exceed 103° Fahrenheit." Salt is added toward the close of the process, the masses allowed to cool to the requisite temperature, and the solid stearine is separated from the liquid oil by a press or by the centrifugal. The processes of washing, comminuting, solidification by cooling, and expression had long been known

in the arts at the time of Mege's invention. The artificial digestion is, therefore, all that is novel and original in his process.

My judgment is, therefore, that the process of Mege is, as he himself says, not a modification of an old process (as the process of the defendant essentially is) but an essentially new, and therefore a different, process.

574 Q. 13. What have you to say as to any possible allegation of the equivalency of the process of "artificial digestion of fat with the rendering of fat by heat at a temperature ranging from 120 to 130 degrees Fahrenheit?

A. As I understand the use of the word equivalent, one process to be equivalent to another must not only accomplish the same object as the other but must accomplish it substantially in the same way. In my judgment, the two processes referred to are not equivalents, 1st, because they do not produce the same identical product, and, 2d, because they do not produce their products in the same way. The object of the Mege process is to produce a product which must "have the taste of molten butter." The object of the process employed by the defendant is to produce an odorless and flavorless fat. The process of the Mege patent is a digestive process and accomplishes the removal of the membranes enclosing the fat by dissolving them, as in natural digestion, the product of this digestion remaining in the fatty matter as separated. The process employed by the defendant does not essentially destroy the membranes and convert them into other products like the peptones and para-peptones produced by the Mege process, the action of heat in the defendant's process being to set free the fatty matter from the cells either by the fracture of their walls or by the expansion of their contents, or both.

The substances produced being markedly different and their production being accomplished in a different way, the processes themselves are not, in my opinion, equivalent.

Q. 13½. Are you acquainted with the two products, their character and characteristics—I refer to the product of the defendant's
575 process, on the one hand, and to the product of the patented process set forth in the Mege patent, on the other hand?

A. I am.

Q. 14. Please state your knowledge regarding these two products and their characteristics and any conclusions at which you may arrive from a comparison of the two.

A. The product of the defendant's process, as I have examined it, is a perfectly neutral fat, having neither odor nor flavor. Upon taking it to the mouth it has the well-known fatty feel upon the tongue. Before expression the presence of the stearine causes it to solidify more readily and it becomes sticky. After the expression the oil is equally bland and neutral and equally devoid of taste or odor.

The product of the Mege process before expression has a peculiar and very decided odor and taste resembling butter, which taste and odor are also retained in the product after separation from the membranes. This flavor is decided, and is the exact taste referred to in

the present patent as "the taste of molten butter." My conclusion is that the products are quite different in their character, each being the product of a different process, specially adapted to the end desired by their different originators.

Q. 15. Please state what opportunities you have had by which you have acquired your knowledge of the product of the defendant's process, and also of the product of the process set forth in said Mege reissued patent No. 10137.

A. My knowledge of the product produced by the process of the defendant is derived from an examination of said product at
576 their factory. My knowledge of the product of the process described in the said Mege patent is derived from an inspection of the said product as prepared by myself, according to the specifications of said patent, 1st, in Philadelphia, in my own laboratory, and, 2nd, on a larger scale in the factory of the defendant.

Q. 16. Give the number of pounds of raw fat employed by you in working the patented process in the two cases.

A. In the laboratory experiment about 3½ pounds of fat was employed; in the experiment at defendant's factory, about 150 pounds.

Q. 17. Please give in brief the process employed by you in the two cases, and the results observed by you.

A. The process followed in both experiments was the same, and the products were similar in the two cases. The fresh fat was cut in slices and placed in water containing 15 per cent. of sea salt and 1 per cent. of sulphite of soda and allowed to remain for about 4 hours in the laboratory experiment and about 10 hours in the factory experiment. The artificial gastric juice was made by taking half the stomach of a sheep (laboratory experiment) or half the stomach of a pig (factory experiment) well washed and macerating it in 3 litres of water, to which 30 grains of biphosphate of lime had been added. After about three hours the liquid was strained. This is the artificial gastric juice referred to in the patent. During the maceration the fat was finely crushed or hashed. It was then mixed with the necessary quantity of gastric juice and heated in a water bath, the temperature being slowly raised, but never allowed to exceed 103° Fahrenheit. After one or two hours of treatment the fat cells appeared to be completely broken down, and the mass appeared uniform (with the exception of the larger masses of
577 animal tissue) and pasty or salvy in its consistence. No separation of liquid oil was observed in either experiment, although the temperature was carried nearly but not quite to 103° Fahrenheit. One per cent. of salt was then added to the mass; it was thoroughly stirred for 15 minutes and then allowed to cool. As already stated, the product, both before and after expression, had a decided odor and taste resembling that of butter.

An adjournment was here taken to Tuesday, July 29, at 9.45 a. m.

TUESDAY, *July* 29, 1884.

Met pursuant to adjournment.

Present: As before.

Q. 18. Professor, are you acquainted with the French and German languages, and can you read and translate them into English?

A. I am familiar with the French and German languages, and have been for the past 20 or 25 years accustomed to read chemical, physical, and physiological papers in those languages and to translate them into English. While, therefore, I do not consider myself an expert in those languages, I believe that I understand them sufficiently well to be able to translate any scientific article written in them.

Q. 19. Please examine the several exhibits in this case—I refer to the copies of Mege's French, Bavarian, and Austrian patents and the translation of the same in evidence—and state whether or not said translations are correct translations in each case.

A. I have examined the said French, Austrian, and Bava-
578 rian patents in the original, and have compared them with the translations of the same. As a result of this examination, I believe that the said translations are correctly made.

Counsel for defendant here offers in evidence a duly certified copy of the bill of complaint filed in the circuit court of the United States for the northern district of Illinois on the 22d day of August, A. D. 1876, in the cause wherein The United States Dairy Company was complainant and N. K. Fairbank *et al.* were defendants, said bill of complaint being brought for an alleged infringement of Mege's American patent, reissue No. 5868, in evidence in this case, being a reissue of the original patent granted to Mege, and of which the patent as set forth in the bill of complaint in the present case is a reissue, and in particular to the following passages from said bill of complaint: "And thereupon your orators complain and say that before the year 1869 Hippolyte Mege, of Paris, France, discovered that a substance substantially identical with true butter might be extracted from the fats of kine or other animals, and, having reduced the same to practice, took patents for the same invention in France and England in the year 1869."

Also: "And your orators further show unto your honors that the said Hippolyte Mege * * * did, on the first of November, 1873, apply to the Patent Office for a patent for his said invention, and such proceedings were had that on the 30th of December, 1873, letters patent of the United States were issued to him for his said invention so made by him before the year 1869 and patented by him
in that year in England and France, the said invention not
579 having been introduced into public use in the United States for more than two years prior to his said application."

Attention is also called to the abstracts of title included in the file wrapper and contents of the reissued patents in evidence in this case and to the allegations of title in the bill of complaint in this cause. The notary is requested to mark said bill of complaint "Defendant's

Exhibit Bill of Complaint, United States Dairy Co. *vs.* N. K. Fairbank *et al.*"

Complainants' counsel objects to the above and foregoing documents and all quotations therefrom as wholly irrelevant, incompetent, and immaterial.

The stipulation between the parties relating to the process worked by the defendants is as follows:

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

It is hereby stipulated by and between the parties to the above-entitled cause, represented by their respective counsel, and for the purpose of expediting the preparation and hearing of the above cause, as follows:

That the defendant, in its factory, first runs the fresh beef
580 fat, which has been packed with ice during the preceding night, through a hasher, where it is thoroughly hashed and is comminuted, and then melts the hashed fat in a jacketed kettle at a temperature ranging from one hundred and twenty degrees to one hundred and thirty degrees Fahrenheit, the fat being thoroughly agitated by mechanical stirrers while melting and salt being mixed with the fat while it enters the kettles, and then, when settled, the melted fat is drawn off into other kettles, when the temperature is raised about five degrees and maintained about three hours, when the fat is put into seeders, which are kept in a room at a temperature of eighty-four to eighty-six degrees until it granulates and thickens. Then the stock is put into cloths holding three pounds each in a flat cake seven by ten inches and one inch thick. Eight of these are placed on an iron plate and then an iron plate in alternation to seventy-five rows of cakes and plates and put into a press. Then the oil is squeezed out by pressure in the press and runs into a tank, from which it is pumped through pipes into a kettle in the same room and temperature, where it remains several hours and is run into tierces.

This stipulation does not prevent the consideration or introduction of evidence by either party relating to the subject-matter thereof not inconsistent with the contents hereof.

That the complainants are to finish and complete at once
581 and at this sitting in New York all their testimony, *prima facie*, and that the defendant is to use its best effort and endeavor to put in and complete its rebuttal within sixty days thereafter.

OFFIELD & TOWLE,
Compl'ts' Sol'rs.
HILL & DIXON,
Def't's Sol'rs.

New York, Nov. 21st, 1883.

Cross-examination by C. K. OFFIELD, Esq.:

C. Q. 20. Professor, have you been continuously prof. of physics at the University of Pennsylvania since the year 1873?

A. I have.

C. Q. 21. Is it claimed by you that there is anything in this fact which assists in any manner or prepares you for the testimony and opinions which you have given in your deposition over and above the knowledge which you would have had during that time if you had been professor of botany, geology, or astronomy in the University of Pennsylvania since 1873?

A. In so far as the fundamental processes are concerned which are mainly chemical and physiological, my physical studies have not directly assisted in their investigation, but in reference to many adjuncts of the processes which are mechanical I believe my knowledge of physics has been of service in enabling me to understand them. The question of temperature, too, which I understand to be a fundamental one in these processes, is not a chemical but a physical question.

582 C. Q. 22. Have you claimed for yourself or considered yourself for the last eight or nine years a standard authority in physiological chemistry in comparison with your associates, the distinguished chemists of this country, who have made a specialty and study in this particular direction during that length of time?

A. I have been for the whole of this time the chemical editor of the American Journal of Science, which is the leading scientific journal in this country. I have continued to take all the chemical journals which I took while in New Haven, and have made almost monthly abstracts from these in the department of physical, general, inorganic and organic, and physiological chemistry from the said journals. The question embarrasses me when it asks me to make a comparison, as I understand it to do, between myself and other physiological chemists. I am willing only to say, therefore, that I consider myself competent to express an opinion as an expert upon questions of this sort.

C. Q. 23. Your communications to the American Journal of Science, as editor, have been confined almost entirely in subject-matter to what I will call mineral chemistry, and if you have during that time published in that journal any theories of your own, or discussed therein questions relating to physiological chemistry, please designate and identify the journals in which said communications were published.

A. On the contrary, my belief is that the majority of such abstracts as I have published in the American Journal of Science, as chemical editor, have been abstracts of papers in organic and physiological chemistry. Within the time specified, however, I have made no original researches in physiological chemistry, and have of course published none.

583 C. Q. 24. The text book of which you speak as being the author of on chemistry in 1870 was a text book which treated exclusively of mineral or inorganic chemistry, was it not?

A. It was not. It consisted of two portions, the first of which was entitled "Theoretical Chemistry." This part was written for the purpose of showing that the philosophy of chemistry, which up to that time had differed for organic and inorganic chemistry, was identically the same for both, so that the student studying the principles of chemical theory from this part of the book would be able to apply these principles to the constitution of organic as well as inorganic compounds. This theoretical part was intended equally as an introduction to the three parts of the book which were to follow it. The first, on inorganic chemistry, has been published; the others, upon organic and physiological chemistry, respectively, have not yet been prepared.

C. Q. 25. I see that you state that you were professor of physiological chemistry and toxicology in the medical department of Yale College from 1867 to 1873. Do you wish to be understood that there was anything in your duties or labors arising out of this professorship during that time which qualifies you materially in the particular line of knowledge or study concerning which you then held your professorship?

A. I utterly fail to understand the meaning of the question.

C. Q. 26. I mean that if I understand the character and standing of the medical college or medical department of Yale College that it has no character and standing as a medical institution as would give any weight to the opinion of any professor of physiological chemistry in that medical school simply from the fact of that
584 professorship alone, and my question was intended, in a little more modest manner, to ascertain your opinion of that fact.

A. Yale College, as an institution of learning, cannot have her reputation strengthened by any opinion of mine nor injured by any insinuations of counsel. My judgment is, unequivocally, that the medical department of Yale College is equal to the other departments of the said institution in the character of the men who are connected with it and the kind of instruction which they give. It is true that the number of students enrolled there is small, but in the character of the work done I am of the opinion that its standing is easily among the first six or eight of the leading medical colleges of the country.

But the question seems to me irrelevant. A professor in an institution cannot, in my judgment, be discredited by the character of the institution with which he is connected, if this should happen to be of low standing, nor, on the other hand, can he be made competent by being connected with institutions of high grade. If he is himself competent his work will rest upon that basis, and his authority will be recognized for that reason.

Recess until 2 o'clock.

C. Q. 27. When did you first become familiar with the invention or discovery consisting of the process and the product of Hippolyte Mege as patented in this country in December, 1873?

A. I first became acquainted with the process known as the Mege process in 1872.

C. Q. 28. My question was, or intended to be, where you first became acquainted with the Mege 1873 United States patent.

585 A. I first saw the Mege patent, No. 146,012, which I suppose to be the patent referred to in the question, in the winter of 1882–'3—I think in January, 1883.

C. Q. 29. Do you know Mr. James Wilson, of New York?

A. I do not.

C. Q. 30. Do you know the United States Dairy Company of New York, one of the former owners of the Mege patent sued upon in this case?

A. I know that there is or was such a company, but I do not know personally any of its officers or employees.

C. Q. 31. In the year 1880, or prior to that year, did you visit in New York city and inspect the works of that company in their manufacture of oleomargarine under the Mege patent?

A. In 1880, I think in May, I visited works said to belong to the Commercial Manufacturing Company, in New York, where I witnessed the operation employed by them for the production of butter by the oleomargarine process.

C. Q. 32. That was the Commercial Manufacturing Company of New York, the complainant in this suit, was it not?

A. I do not know.

C. Q. 33. You do know, however, do you not, that the Commercial Manufacturing Company, whose works you visited in May, 1880, were manufacturing their product under the Mege patent?

A. I was so informed at the time; but the process, as I witnessed it there, was not the process referred to in the Mege patent No. 146,012, which is the patent specified in cross-question 28 and the answer thereto.

C. Q. 34. Will you please state, itemized and in detail,

586 what the process was which you witnessed and inspected at the works of the Commercial Manufacturing Company in the spring of 1880, and what was the resulting product therefrom, as you then understood it?

Objected to as immaterial, irrelevant, and incompetent, and attention is called to the fact that the complainant in this cause is not the Commercial Manufacturing Company, but is another company, incorporated under the title "The Commercial Manufacturing Company, Consolidated."

Complainants' counsel also calls attention to the fact that the complainant in this case is the Commercial Manufacturing Company testified to by the witness.

Counsel for defendant calls upon counsel for complainants to offer some proof of his allegation when opportunity shall occur.

A. The fat, as received from the slaughter-houses, I saw washed, hashed, heated in a rendering kettle until the membranes were separated, the liquid fat upon the surface drawn off into settling kettles, and subsequently drawn from these into coolers kept in a room of constant temperature. The fatty matter was subsequently expressed, the liquid portions being put into a churn and agitated, as I was

told, with milk and a little coloring matter. After thoroughly emulsionizing, the product was run out upon pounded ice until cool, allowed to stand over night, and packed for sale as butterine.

C. Q. 35. As I understand you, that part of the process described, which you saw personally and actually inspected, ceased upon
587 the extraction or pressing of the product—that is, you did not personally inspect any admixture of the butter or beef oil with milk by churning, and its subsequent treatment by ice. Is that correct?

Same objection.

A. It is not. I should have said that I witnessed the entire process in its several stages, including that of churning, and intend it to be so understood in my former answer. I did not, however, of course, witness each operation performed upon identically the same sample of fat, but the processes were all in operation simultaneously, or nearly so, during the time that I spent at the factory.

C. Q. 36. The kettle which you designated a rendering kettle at the Commercial Company's works was a jacketed kettle, was it not, that is heated indirectly by steam or water?

Same objection.

A. It was.

C. Q. 37. The fat which you speak of going into the kettle as hashed was exceedingly fine comminuted fat, almost pasty or pulpy in its composition, was it not, in the Commercial Company's works?

Same objection.

A. My recollection is that it was not. I remember being somewhat surprised that the hashed fragments were so large.

C. Q. 38. Do you remember at what temperature this hashed fat, as you term it, was melted in those jacketed kettles at the Commercial Company's works?

Same objection

A. I do not. I did not take the temperature myself, and was informed in a general way, as I recollect the matter, that it was about 130° Fahrenheit.
588 I should like to state that the object for which I visited the factory was not for the purpose of crucially examining the process of the product, but for the purpose of satisfying myself as to the cleanliness of the operations and the wholesomeness of the product.

C. Q. 39. Do you remember that sea salt was sprinkled in those jacketed and melting kettles at the Commercial Company's during the melting of the fat?

Same objection.

A. I do not. I did not see it used nor was I informed upon that point.

C. Q. 40. Do you remember that the fat in those jacketed kettles

of the Commercial Company were constantly stirred and agitated while melting?

Same objection.

A. I do.

C. Q. 41. Did you taste this melted fat and smell it and handle it in the Commercial Company's works when drawn off from the melting kettles into the settling kettles or when in the coolers?

Same objection.

A. I do not recollect to have tasted it until after it was expressed.

C. Q. 42. Do you mean by being expressed that the product at the Commercial Company's works was taken from the seeders or coolers in a room of constant temperature and placed in cloths in the same room and then subjected to the operations of a press in that same room to separate the oil from the stearine?

Same objection, and also because the subject was not inquired into upon the direct examination; and counsel for com-
589 plainants is hereby notified that as to this subject and as to all matter relating to the operations of said Commercial Manufacturing Company he will be regarded as having made the witness his own, and under the rule will be bound by the answers and not be permitted to contradict or controvert the same.

A. I do, either in the same room or an adjoining one.

C. Q. 43. Do you remember the temperature of the room in which these settling kettles and coolers and presses were kept, at the Commercial Manufacturing Company's works, in 1880?

Last objection repeated.

A. I did not observe the temperature myself, but was told that the temperature was such as to allow the stearine to separate in the solid form, while the oleine and palmitine remained liquid.

C. Q. 44. Did you have any difficulty in the spring of 1880 in recognizing in the warm oil as it flowed from the presses of the Commercial Manufacturing Company the taste of molten butter, and in appreciating and recognizing the absence of the taste of fat in that oil?

Same objection.

A. On the contrary, my attention was distinctly called, as I remember, to the perfect neutrality of the fat, and my own experience showed it to be nearly or quite odorless and tasteless. It certainly did not suggest to me the taste of molten butter.

C. Q. 45. How long has it been since you tasted molten butter, if you can recollect?

A. About a month ago.

590 C. Q. 46. I mean prior, say, to your retainer in this case and without reference to any experiments made herein?

A. I cannot say, as I am not in the habit of entering in my diary

when I use molten butter for food, as I am fond of doing. I use it as a dressing on various vegetables and use it frequently upon my table.

C. Q. 47. Do you think that the ordinary consumer would distinguish any appreciable difference between the molten oil as it flowed from the presses of the Commercial Company and a good quality of molten butter unsalted?

Same objection.

A. I do not know what the ordinary consumer would do, but I think he should be able to make the distinction.

C. Q. 48. Did you, after your personal inspection and examination of the process and product of the Commercial Company, write an opinion concerning that product, either to that company or the United States Dairy Company, with which it was consolidated?

Same objection.

A. I did.

C. Q. 49. If you have no objection, please state whether you were paid for that opinion and how much?

Same objection.

A. I received a fee for my services at that time, only a part of which was intended as compensation for the certificate referred to. I am not able to say how much of the amount received was for the certificate, as the certificate was not charged for separately.

C. Q. 50. Was this fee paid you by the Commercial Manufacturing Company; and, if so, what was the fee paid, and was not
591 the remainder of the fee intended as a retainer on behalf of the company over and above the amount charged for your opinion or certificate?

Same objection.

A. The fee for the service referred to in 1880 was not paid until nearly or quite two years afterward. By whom it was paid I do not now recollect and cannot tell without referring to the letter in which the check was enclosed, changes having taken place, as I understood, in the organization of the company during the interval. The amount received was two hundred dollars. No part of this sum obviously could have been paid as a retainer. I received a separate retaining fee, which came, as I understood, from the United States Dairy Company, prior to my visit to the Commercial Company's factory.

C. Q. 51. This retaining fee was under the Hippolyte Mege patent in this country, was it not?

Same objection.

A. The history of the transaction, as I recall it, is as follows: Dr. Mott, of New York, inquired of me by letter if I would visit the works of the company in New York and witness the process and

examine the product there made, and give a certificate as to the wholesomeness of this product and the cleanliness of its manufacture. I understood that he acted for the United States Dairy Company. Upon replying in the affirmative, he sent me a retainer and intimated that they would need my services in a suit soon to be brought by that company. I went to New York at the time appointed to examine the process and the product, and gave the certificate which he asked for. Nothing was said to me at that time about the patents held by the company, and I heard nothing more of the matter for nearly two years, when I requested that our
592 account might be closed, and it was closed by the payment of the $200.00 referred to. I have had no farther communication from any of the parties in question since that time. The reason for closing the account was twofold: First, the United States Dairy Co. had passed out of existence, as I was informed; and, second, the particular suit for which I was retained, as I was afterwards informed, had been concluded. As I had been informed by the counsel for the company that the retainer in question was for that particular suit, the relations between myself and the company ceased upon the closing of the account.

C. Q. 52. Who was the counsel for the company who gave you this last information?

Same objection.

A. George Harding, of Philadelphia.

C. Q. 53. Please state the amount of the retaining fee paid you by Doctor Mott in behalf of the United States Dairy Company, and when it was paid.

Same objection.

A. $250.00. I do not remember the exact date. I think it was in April or May, in 1880.

C. Q. 54. Did you not understand perfectly well when Dr. Mott sent you that retainer in behalf of the United States Dairy Company that it was a retainer under the Hippolyte Mege patent, and that such company had no other foundation or background than such patent, and that the litigation or suits which the United States Dairy Company were to bring were founded solely upon the Mege patents?

Same objection.

A. I had a general knowledge of the fact that the Mege
593 patent was owned or controlled by the United States Dairy Company, though this fact was never officially stated to me by any one connected with that company. From my previous knowledge of Mege's invention I assumed that the Mege patent, under which any suit would be brought, would be the patent embodying what I understood to be the peculiar feature of Mege's invention, namely, artificial digestion. The process which I witnessed at the works of the Commercial Manufacturing Company was obviously not this process, and I assumed, without asking the distinct

question, that the company, for reasons best known to themselves, had chosen to work the process which I witnessed in place of the process of artificial digestion described in the original Mege patent, No. 146,012. The first two reissues of that patent, which have since been held, as I am informed, to be null and void, I did not know the existence of at the time of my visit to the factory.

C. Q. 55. Did you ever make more than one visit to the factory, either of the United States Dairy Company or the Commercial Manufacturing Company, and was this visit the one upon which your certificate or opinion was founded?

Same objection.

A. The only visit which I made to the factory was the one already described, in May, 1880. I found my opinion of the process in use there upon the examination which I made at that time.

C. Q. 56. There has been introduced into this record and testified to as correct a copy of a letter professed to have been written by you March 22, 1880, and addressed to the United States Dairy Company, in which you state, referring to the Mege patent, that
594 "the butterine prepared under the inventor's patent is therefore, in my opinion, quite as valuable a nutritive agent as butter itself. In practice the process of manufacture, as I have witnessed it, is conducted with care and great cleanliness." Is the process of manufacture which you refer to in this quotation the process of manufacture that you witnessed at the Commercial Company's works as you have delineated?

Same objection.

A. As I have no copy of that letter by me I cannot vouch for its correctness and its agreement with the original. Assuming, however, the quotation to be correct, the process referred to in it is the process which I witnessed in operation at the Commercial Manufacturing Company's factory. I was informed that this process was the process of Mege, and although I know that the fundamental feature of his original invention was the process of artificial digestion, and although I recognized that this process of artificial digestion was not employed at that time in the factory of the Commercial Manufacturing Company, I was led to infer that the process then employed at that factory was a modified form of the invention still called by the name of Mege, perhaps because butter was its final product. Subsequently, upon more closely examining the question, I was led to the conclusion that the process in operation at the works which I witnessed was not in accordance either with the original Mege patent or with the last reissue thereof, the reissue upon which the present suit is brought. So far, therefore, as the statement in the question, "the butterine prepared under the inventor's patent," assumes that the patent referred to is the original patent of Mege, No. 146,012, it is an error founded upon misinformation, as I have subsequently learned. So far as the statement quoted is in-
595 tended to endorse the product of that factory as to its wholesomeness I am still of the same opinion.

C. Q. 57. You have volunteered an elaborate and extensive defense in answer to a question which called for no such reply; but I will ask you now if you have any other way of reconciling the fact other than volunteered in your last answer explaining why, in the year 1880, while you were under the retainer under the Mege patent in behalf of the United States Dairy Company, you certified that you witnessed the production and preparation and the process of manufacture under the Mege patent, and that it was conducted with great care and cleanliness at the works of the Commercial Manufacturing Company, while now, under a retainer as against the patent, you testify that the process of manufacture which you have witnessed was not conducted under the Mege patent at all.

Same objection.

A. I was informed, as I have already stated, and at that time believed that the process which I witnessed at the Commercial Manufacturing Company's works was a modified Mege process. No copies of these patents had been furnished me, and I had at that time never seen them. No suit was at that time pending, so far as I understood. No conference was ever had with me as to the questions involved; but, on the other hand, I was distinctly informed that at the proper time I would be requested to examine the matter preparatory to testifying. As the sole object for which I visited the works of the Commercial Company was to ascertain the cleanliness with which the process was conducted and the consequent wholesomeness of the product, as I have already stated, preparatory to writing a letter upon the subject, I deemed it necessary and
596 desirable to confine my attention to the particular questions involved. Had I known what I now believe, that the term Mege patents have reference only to those in which artificial digestion is used, I should have worded the letter so as to indorse the product of the factory without asserting anything of the origin of the process employed. I entirely fail to see any discrepancy in opinion between the opinion which I held in 1880 and the opinion which I now hold in regard to the cleanliness with which the process was conducted and the wholesomeness of the product. The only difference which exists is one of fact. I supposed the process which I witnessed was covered by a Mege patent. I now know that this is not the fact.

C. Q. 58. You have stated that the $200.00 paid you was only in part for your inspection of the process of the Mege patent at the Commercial Company's works. Will you please state the services performed, and when they were performed, which represent the remaining portion of the $200.00?

Same objection.

A. Will the counsel for complainants please quote the exact language in which any such statement was made?

C. Q. 59. You state, in answer to C. Q. 49, referring to the services evidenced by your deposition and letter, "only a part of which was compensation for the certificate referred to," and you afterward iden-

tified the sum as $200. What I wish to know is what services represent or absorb the remainder of the $200.

A. Your quotation is correct. I did say that a part of the $200 was compensation for the certificate, but I did not say that a part was paid for my inspection of the process of the Mege patent
597 at the Commercial Company's works. I now, however, state that the $200 was received for professional services, including expenses in examining the process and product at the time specified and in furnishing the opinion.

C. Q. 60. Did you ever write or give an opinion for the United States Dairy Company with the Mege patent before you, analyzing the invention therein expressed and recognizing the process and product of Commercial Company as substantially the same thing as the Mege patent?

Same objection.

A. I have no recollection of ever writing or giving such an opinion.

An adjournment was here taken to Wednesday, July 30, 1884, at 10 o'clock a. m.

WEDNESDAY, *July* 30, 1884—10 o'clock a. m.

Met pursuant to adjournment.

Present: As before.

C. Q. 61. When you say, Professor, that you "closed your account" with the Commercial Company or U. S. Dairy Co. what do you mean by that expression, and what act does it represent upon your part?

A. I used the expression in the ordinary commercial sense. As I understand it, an account is open so long as a balance remains on the debit or credit side of the account. When this balance is cancelled in any way the account is said to be balanced or closed.

C. Q. 62. Did you notify either the Commercial Company or the dairy company that you had closed your account with them?

A. I notified them that a balance remained to my credit,
598 and when they sent me a check for that balance it was equivalent, as I understand the practice in commercial transactions, to a closing of the account on their part as well as mine. However, I corresponded upon the subject with Mr. Harding, notifying him that I considered the retainer, which was a retainer for a special cause, to have expired, leaving me entirely free. I speak, of course, from recollection, the original papers being in Philadelphia.

C. Q. 63. What was the date of this correspondence with Mr. Harding, and were all your communications in writing?

A. I do not remember the exact date, but it was not far from the time when the account was closed. A part of the communication with Mr. Harding was by letter and a part verbal.

C. Q. 64. At the date of the patent to Hippolyte Mege in the United States, in December, 1873, ice was a well-known equivalent

at that time with sea salt and sulphite of soda in the neutralization of the ferments of the fat, was it not?

A. Both were known at that time to hinder the process of fermentation. Using the word equivalent in the sense in which I defined it in my answer to direct question 13, my judgment is that these different processes would scarcely be called exact equivalents.

C. Q. 65. But both sea salt and sulphite of soda and ice, or a temperature greatly reduced by means of ice, have been employed interchangeably for many years prior to 1873 in the neutralization of the ferments of fats, had they not, the use of the one or the other depending upon geographical position, convenience, or cheapness? Is not this correct?

599 A. I believe that they had.

C. Q. 66. Artificial gastric juice was an old and well-known composition or product for many years prior to 1873, was it not?

A. Artificial gastric juice in general; yes.

C. Q. 67. In your opinion did the artificial gastric juice mentioned in the third section of the Mege patent sued upon have any other object, purpose, or effect than of assisting, in case the crushing and grinding had not accomplished that object, in liberating the oil globules from their cells upon the application of a low degree of heat?

A. The object of the artificial gastric juice mentioned in the section referred to is stated in the patent itself to be the production of an artificial digestion, "artificially producing the natural work which is performed by the cow when it re-absorbs its fat in order to transform the same into butter." In natural digestion it is understood that the natural gastric juice has for one of its functions the liberation of the oil globules, as stated in the question. My opinion is, however, that in addition to this action it has others, which Mege regarded of value in the preparation of butter, which lead him to prefer this process for separating the fatty matter to others previously known.

C. Q. 68. Please state what other object, in your opinion, the patentee had in the employment of this gastric jusice except to assist in the liberation of the fatty globules from their cells in case the cellular tissue had not been sufficiently weakened or destroyed by the other process to that end contained in his patent.

A. The object which the patentee had in view was the pro-
600 duction of butter, as he states in his specification. The natural fat of the animal, the crude material which he uses in his process, is not butter. He applies his process of artificial digestion to such fat and produces a product which must, according to his patent, have the taste of molten butter, and which (I quote from the first reissue of the Mege patent) "is composed, like butter, of oleine, margarine, and a little odoriferous oil." In answer to the question, therefore, my opinion is that the patentee used the process of artificial digestion, not only for the purpose of setting free the fatty matter, but also for the purpose of producing the butter taste.

C. Q. 69. The patentee mentions two kinds of butter which are to be produced, one of which he terms "margarine" and the other

"more perfect butter," and in his claim he claims the improved material herein described produced by treating animal fat so as to remove the tissues and other portions named with or without the addition of substances to change the flavor, consistency, or color, as set forth. Which of the two classes of butter or of the two kinds of improved material do you now think the patentee had in view in the use of gastric juice, so far as any element of taste or flavor in the composition of the product is concerned?

A. Both kinds of product are called butter, as the question correctly states. To the second of these products he gives the name "more perfect butter." The process by which the butter of the first part of the patent is converted into the more perfect butter by a subsequent process, not involved, as I understand it, in the present issue, is essentially a process of emulsionization. It is to the first product that Mege refers in his patent which must have "the taste of
601 molten butter" and which "is composed, like butter, of oleine, margarine, and a little odoriferous oil." The object of the process of artificial digestion, as I understand it, is to produce this butter taste, the main object of the subsequent process by which the more perfect butter is made being to improve its physical consistency without materially altering its chemical constitution other than is accomplished by the addition of cream. My judgment is therefore that the patentee intended to claim the butter produced by the physiological process of artificial digestion, and also the "more perfect butter" produced from this by mammary treatment.

C. Q. 70. In your answer to direct question 6, when testifying in relation to this artificial gastric juice and its relation to section 3 of the Mege patent, you testify as follows, as to the function of this gastric juice in the third section of that patent: "By dissolving the membranes constituting the walls of the fat cells set free, the contained fat, and this, as I understand it, is the precise function of the artificial digestion described in the third section." You now state that "The object of the process of artificial digestion, as I understand it, is to produce this butter taste." I will ask you now to explain to the court, to obviate any impression the court might receive to the effect that the necessities of a patent case can, at any time, alter a scientific fact, how it is that in one part of your deposition you can testify that the precise function of this artificial digestion is the releasing of the fat from the cells, and how, in another part of your deposition, you can testify that the function of this artificial digestion is to produce the butter taste?

A. Nothing seems to me easier. I fail entirely to see any contradiction in opinion as expressed in the passage quoted, and
602 I am sure the court will receive no impression that the necessities of this patent case have in the least altered or tended to alter the facts of science. The function of the gastric juice is twofold: The first is to dissolve the membranes; the second is to produce the taste of butter. Both of these functions being, in my judgment, positive are precise, though the former of them would appear to be of more importance in the general theory of digestion than the latter. Further, it will be observed that the complete

statement in answer to the 6th direct question is as follows: "Natural digestion in the stomach, therefore, by dissolving the membranes constituting the walls of the fat cells, sets free the contained fat, and this, as I understand it, is the precise function of the artificial digestion described in the third section." This statement evidently means that the precise function which is performed by the gastric juice in natural digestion is also the precise function performed in the artificial physiological process termed "concentrated digestion" in the present reissue; but I fail to find the statement there or elsewhere that this is its only function.

C. Q. 71. Is this the extent of the explanation called for in the last answer?

A. In my judgment, it is. There being no discrepancy of fact or opinion that I perceive, I see not how I can explain any.

C. Q. 72. In your answer to direct interrogatory 6 you state that gastric juice "has no appreciable action upon the fatty or starchy matters of the food, but acts upon the fibrinous and albuminous tissues to render them soluble by converting them into soluble peptones and insoluble para-peptones." Have I stated you correctly?

A. You have.

603 C. Q. 73. Will you please state to the court whether, in your opinion, soluble peptones and insoluble para-peptones have anything to do with the taste of butter?

A. I do not know. They may have and they may not have. I have made no experiments to answer this question, and my reading has given me no information upon the subject.

C. Q. 74. But you do know that one of the objects of the Mege patent sued upon was to completely and entirely remove all the tissues which enclose the fatty globules, do you not?

A. What I know of the Mege patent sued upon is contained in that patent itself. So far as I understand the point of the question, if the objects of the Mege patent stated in the question are contained in that patent I believe that I know them.

C. Q. 75. When was it that you personally visited the factory of these defendants and witnessed the process employed by them, as set forth in the stipulation between the parties dated Nov. 21, 1883?

A. On the 9th or 10th of the present month.

C. Q. 76. Have you ever followed the process of either the Bavarian, Austrian, English, or French patents of Mege, introduced in evidence, with those patents before you or with special reference thereto? And, if so, please state when and where.

A. I have never followed the process of those patents with the patents before me, and have never followed the process of those patents in any way except in so far as this process agrees with the process described in Mege's American patent.

C. Q. 77. Have you ever followed the process of the patent

604 sued upon or made any experiments in connection therewith except those identified in answer to direct questions 15 and 16, being once in your laboratory and once in defendant's factory?

A. I have not.

C. Q. 78. Did any person assist you or was present with you in your experiments with the Mege patents sued upon?

A. The only person present at my experiments in Philadelphia was the defendant's counsel, a portion of the time. At the experiment at the factory the employees of the factory were of course present, and I called upon some of them for assistance from time to time.

C. Q. 79. How long did the factory experiment last?

A. Several days; I think 4 or five.

C. Q. 80. Was Prof. Haines, of this city, present at that experiment at the factory?

A. He was not.

C. Q. 81. Has Prof. Haines consulted and agreed with you as to the subject-matter and your deposition?

A. Prof. Haines and I have had several consultations upon the subjects involved in this issue, and I believe that, so far as the subject-matter of my deposition was a matter of conference between us, he is in accord with me.

C. Q. 82. Did you witness the actual preparation of the fat for the melting kettle at the defendant's factory under the stipulation, and examine the mechanism by which the fat was prepared for the kettle?

A. I did.

C. Q. 83. Will you please describe the machine used to prepare the fat for the kettle which you saw?

A. The machine which I saw employed at the defendant's
605 factory, technically called a hasher, consisted of a trough or box to contain the washed fat and a hopper into which this fat was subsequently thrown. From this hopper it descended into an enclosed metal box containing one or more cylinders or discs provided with knives. These cutters were caused to revolve rapidly by steam power, and by their action produced an exceedingly fine comminution of the fat.

C. Q. 84. Is it not a fact that these knives were arranged upon a cylinder obliquely, so as to form a screw-feed and force the fat to one end of the machine while cutting and crushing it, and that at the delivery end of the machine there was a plate full of small holes like a sieve, through which the fat was finally forced or delivered?

A. I did not examine the details of its construction in these regards, as the machine was almost constantly in use and was covered with fatty matter, but from the mode of action of the machine I should think that this or some similar construction was probable.

C. Q. 85. The fatty matter when it was delivered from the machine was pasty or pulpy in its consistency, was it not?

A. It was.

Redirect examination:

R. D. Q. 86. The taste of "molten butter" has been frequently referred to. I will ask you to compare the taste and odor of the Mege product as produced by you in working the Mege process with

the taste and odor of good unmelted butter, and ask you what was the fact observed by you?

Objected to as incompetent.

606 A. My opinion is that the difference between molten and unmelted butter, so far as the taste is concerned, is one of consistence and feel upon the tongue rather than of flavor. The peculiar buttery taste, to which I referred as having been observed in the product of the Mege process, is the special flavor well known to characterize butter, whether melted or unmelted.

R. D. Q. 87. Professor Chandler, of New York, one of complainants' experts, in answer to cross-question 82 in his deposition in behalf of the complainants, testified as follows—I quote from the record: "Mege found that his oleomargarine possessed the properties of butter. He knew that it contained oleine and margarine, and when he applied it to his tongue he found that to the taste and, unavoidably to some extent to the nose, as it is impossible to make one of these tests without making the other, he found that it possessed the flavor—that is, the taste and odor combined—of butter. This he attributed to an odoriferous oil. Most substances in nature owe their peculiar ordors to an odoriferous oil, and he inferred that the odor in this case was due to an oily body." Are you in accordance with Prof. Chandler upon this point?

A. I agree with the opinion expressed by Prof. Chandler in the quotation referred to.

GEORGE F. BARKER.

Subscribed and sworn to before me this 30th day of July, A. D. 1884.

EDWIN L. THURSTON,
Notary Public.

An adjournment was here taken to Thursday, July 31st, 1884, 10 o'clock a. m.

THURSDAY, *July* 31*st*, 1884—10 o'clock a. m.

Met pursuant to adjournment.

Present: As before.

The defendant rests.

607 It is mutually agreed that as the commencement of the taking of the testimony of the complainants in rebuttal is deferred some days, by request of counsel for defendant, on account of sickness in his family, that the full time of such delay shall be added to the time allotted by the court to the complainants within which to take their rebuttal testimony, and as the time of the commencement of the taking of such rebuttal is deferred to August 22d, 1884, twenty-five days thereafter is hereby allowed by stipulation in which the complainants shall take their rebuttal testimony, which is to begin in New York, August 22d, 1884, upon notice given.

EDWIN L. THURSTON,
Notary Public.

608 STATE OF ILLINOIS, } ss:
County of Cook, }

I, Edwin L. Thurston, a notary public in and for the county of Cook, in the State aforesaid, do hereby certify that the foregoing deposition of Henry Gradle and George F. Barker were taken by and before me at the times and place therein specified; that the parties to the said cause were present at the taking of the same—complainants, by their counsel, C. K. Offield, Esq., of Offield & Towle, and defendants, by its counsel, T. S. E. Dixon, Esq., of Hill & Dixon—as therein appears; that before deposing the said Henry Gradle and George F. Barker were by me duly sworn to testify the truth, the whole truth, and nothing but the truth in the cause aforesaid; that their depositions were reduced to writing by me from their respective statements, and the same duly subscribed and sworn to before me by each of them, as therein appears.

And I do further certify that I am neither attorney nor of counsel for any of the parties in said depositions or caption named, and am in nowise interested in the result of said case.

In testimony whereof I have hereunto set my hand and notarial seal this 31st day of July, A. D. 1884.

EDWIN L. THURSTON,
Notary Public.

609 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
v.
FAIRBANK CANNING COMPANY. } In Equity.

Notice.

Messrs. Offield & Towle, solicitors for complainants.

GENTLEMEN: Please take notice that on Monday, September 7th, 1885, at 1 o'clock p. m., we shall proceed to take the testimony of Gilbert A. Peck and other witnesses on behalf of the defendant before Edwin L. Thurston, a notary public in and for the county of Cook and State of Illinois, at his office, room 27, No. 53 Dearborn street, Chicago, Illinois.

You are invited to be present and cross-examine the witnesses.

HILL & DIXON,
Counsel and Sol'rs for Def't.

We hereby acknowledge service of the above notice by copy this 4th day of Sept., 1885.

OFFIELD & TOWLE,
Sol'rs for Comp'ts.

610 Pursuant to the notice hereto annexed, met at my office, room 27, No. 53 Dearborn street, Chicago, this 7th day of

September, A. D. 1885, to take testimony in behalf of the defendant in the above-entitled cause before me, Edwin L. Thurston, a notary public within and for the county of Cook, in the State of Illinois, and special examiner by consent.

Present: Henry S. Towle, Esq., for complainants, and L. Hill, Esq., for defendant.

And thereupon the following proceedings were had:

An adjournment was taken to Tuesday, Sept. 8th, A. D. 1885, at 1 o'clock p. m.

CHICAGO, *September 8th*, 1885—1 o'clock p. m.

Present: Henry S. Towle, Esq., counsel for complainants, and L. Hill, Esq., counsel for defendant.

GEORGE FITZMAURICE, a witness for the defendant, being produced and being first sworn to tell the truth, the whole truth, and nothing but the truth in answer to interrogatories propounded to him by counsel for defendant, testifies as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is George Fitzmaurice; age, 28; 3803 Michigan avenue; occupation, oil-melter.

Q. 2. Where are you employed?

A. Fairbank Canning Company, stock yards, town of Lake.

Q. 3. How long have you been employed there?

A. About 15 months.

Q. 4. State the nature of your work there.

A. My work is working on the large kettles, melting the raw fat for the manufacture of oleomargarine oil.

611 Q. 4½. Were you or were you not present at the works of the Fairbank Canning Co., at the Union Stock Yards, on the 17th day of June, 1885, when I was present witnessing an experimental test of the extraction of oil and stearine from a solidified block of oleomargarine stock?

A. I was.

Q. 5. Who prepared that solidified block of oleomargarine stock for that test?

A. I did.

Q. 6. Will you describe what kind of fat you used and how you treated it until it became the solidified block which I saw?

A. I used beef fat—fresh fat from the slaughter-house. It was thrown into water and washed and cooled, and put ice on it, then thrown into the hasher, and I hashed it, and then melted it at 120 degrees Fahrenheit. I then drew it off into small kettles, and there it settled until the 16th, when I put it into the pans. Those pans were about two feet long and half a foot deep and about one foot wide. We then set the pans in ice water. We got 91 pounds of stock in one, and I forget the amount of stock we got in the other. We had two pans, both filled and cooled the same way.

Q. 7. To whom did you deliver those pans with their contents of refrigerated stock?

A. To Mr. Peck.

Q. 8. Do you know whether the solidified stock which you thus rendered and placed in those pans was the stock which was pressed and tested on the 17th day of June, 1885, that I have above referred to?

A. I do. It was.

612 Q. 9. About how hard was that stock on the 17th of June, when it was taken out of the pans and subjected to the press?

A. Just hard enough to slice and put into wrappers to press.

Q. 10. You have stated that you rendered the raw fat at a temperature of 120 degrees Fahrenheit, and that you settled it after rendering. Did you settle it for any purpose except to separate and remove the scrap?

A. That is what I settled it for—to remove the scrap.

Q. 11. After removing the scrap the stock that remained was the stock that you put into pans and chilled?

A. It was.

Q. 12. After the removal of the scrap was anything else taken out of the stock or added to it, or any change made in it of any kind before delivering it over to Mr. Peck?

A. No, sir.

(The cross-examination of Mr. Fitzmaurice was taken September 9th, 1885, but is placed here, following his direct, for convenience for reference.)

Cross-examination of GEORGE FITZMAURICE by C. K. OFFIELD, counsel for complainants:

C. Q. 13. Who was present when you hashed the fat you have described in this deposition and melted it as you have described?

A. Mr. Peck.

C. Q. 14. All of the time?

A. All of the time; yes.

C. Q. 15. Any person else present besides Mr. Peck?

613 A. No; not at the hashing.

C. Q. 16. Did you hash this fat and melt it just as Mr. Peck told you to do?

A. I did.

C. Q. 17. What was your business before you went to work for the defendant here?

A. I worked at both oil and butter business.

C. Q. 18. Who for?

A. I worked for Swift—for the Commercial Manufacturing Company.

C. Q. 19. When did you work for the Commercial Manufacturing Company, and where and what work did you do?

A. I don't remember the time I went to work there. I worked in the butter department, in New York city.

C. Q. 20. Whatever work you done, as described in this deposition, in June last, in the hashing and melting and cooling of fat, you did such work exactly and precisely as Mr. Peck told you to do it, did you not?

A. I did.

C. Q. 21. Mr. Peck is the foreman and interested in this Fairbank Canning Company, is he not?

A. He is.

C. Q. 22. What was the temperature of the room in which you melted the fat for this experiment?

A. I don't know. We never took the temperature of the room.

C. Q. 23. Did you cool the fat in the same room you melted it in?

A. No, sir.

C. Q. 24. How long after you hashed the fat before you put it into the kettle to be melted?

A. It run right from the hasher into the kettle.

614 C. Q. 25. What day did you hash and melt this fat for this experiment?

A. June 13th.

C. Q. 26. What day did you melt the fat and draw it off into small kettles?

A. June 13th.

C. Q. 27. Where did you take these kettles after you melted the fat?

A. The kettles were still there—the oil, you mean.

C. Q. 28. You have testified that you drew off the oil on the 13th of June into small kettles, and that the oil settled in those kettles until the 16th of June, as I understand you. Is this correct?

A. I did not understand the question. It didn't settle in those kettles from the 13th to the 16th. It was drawn off into seeders and left in them till the 16th.

C. Q. 29. Did you leave the oil in those seeders in the same room that you melted it in?

A. No, sir.

C. Q. 30. How much oil in quantity did you draw off into seeders, and how many seeders were there?

A. One seeder. I don't know the weight or quantity.

C. Q. 31. How large was this seeder, and how near full was it?

A. I dont't know the size of the seeder. The oil came to within about six inches of the top.

C. Q. 32. How deep was the oil in the seeder?

A. I don't know the depth of the seeder.

C. Q. 33. Come within a foot of it.

Ans. I should say a foot and a half in depth.

615 C. Q. 34. Was it one of your ordinary seeders?

A. It was.

C. Q. 35. How many feet square was it?

A. I should judge four feet.

C. Q. 36. What time on the 13th of June was this seeder taken out of the melting-room with the oil in it and put in another room?

A. I don't remember the time.

C. Q. 37. Did you do it?

A. I did.

C. Q. 38. About what time of the day?

A. Between two and three, I should judge.

C. Q. 39. The oil was run directly from the melting kettle into the seeder, was it?

A. No, sir.

C. Q. 40. What was the oil run into from the melting kettle before it was run into the seeder?

A. The settling kettles.

C. Q. 41. How many settling kettles?

A. There are two.

C. Q. 42. What time of the day on June 13th was the oil run off from the melting kettle into the settling kettle?

A. I don't remember.

C. Q. 43. Come within an hour or two of it.

A. Well, I should judge between half past 12 and 1 o'clock.

C. Q. 44. Was the oil then drawn off from these two settling kettles directly into the single seeder you have described?

A. No, sir.

C. Q. 45. What was done with it?

A. It was allowed to settle.

616 C. Q. 46. And was then drawn off between 2 and 3 o'clock into the seeder. Was that it?

A. That's it.

C. Q. 47. What was the temperature of the oil when it was drawn off from these two settling kettles into the seeder?

A. Well, it wasn't above 120.

C. Q. 48. Had there been any heat applied to the settling kettles or had the temperature of the oil been raised in any manner on June 13th after it went into the settling kettles and before it was drawn off into the seeder?

A. Not to above 120°.

C. Q. 49. Well, had there been heat applied to the settling kettle while the oil was in it after it was drawn off from the melting kettle?

A. Yes.

C. Q. 50. How was that heat applied?

A. By steam.

C. Q. 51. Were the settling kettles jacketed kettles?

A. They are.

C. Q. 52. Were they covered kettles?

A. No, sir.

C. Q. 53. Who told you to turn the steam onto those settling kettles and heat them up when the oil was in them?

A. Well, I knew myself that I had to put steam on to keep it at 120°.

C. Q. 54. No person told you, then, to turn the steam on this oil when it was settling in the settling kettles, did they?

A. Mr. Peck told me to keep the kettles warm.

617 C. Q. 55. Did you keep the thermometer in the oil in the settling kettles on June 13th?

A. I did.

C. Q. 56. All the time?

A. No, sir.

C. Q. 57. Are you quite certain the steam did not run up to 150° or 160° some time on those settling kettles on June 13th?

A. I am.

C. Q. 58. Where did you take this seeder with its oil when you removed it from the melting-room on the afternoon of June 12th?

A. Out to the press-room.

C. Q. 59. And did this seeder remain in the press-room continuously, with the oil in it, from June 13th to June 16th?

A. It did.

C. Q. 60. What was the temperature of this press-room kept at during that time?

A. I could not tell you. I don't work in the press-room.

C. Q. 61. It was the same press-room where the defendants keep all their seeders, isn't it?

A. Yes, sir.

C. Q. 62. Don't you know that press-room is kept at a certain temperature for the oil to seed?

A. It is; but I don't know the temperature that it is kept at.

C. Q. 63. Come within a few degrees of it.

A. Well, we'll say 70°.

618 C. Q. 64. Were there a number of other seeders with oil in them in this press-room between the 13th and 16th of June?

A. There was.

C. Q. 65. Were the seeders in this press-room all like the one you put in there on the 13th?

A. I don't know.

C. Q. 66. You are familiar with the seeders of the defendant, aren't you, so that you know whether they are all alike or not?

A. I am.

C. Q. 67. The presses by means of which the oil and stearine are separated are kept in the same room with the seeders, are they not?

A. Yes, sir.

C. Q. 68. This seeder into which you run the oil from the settling kettles upon June 13 was entirely empty, was it not, when you run the oil in? No water or anything else in the bottom of it, was there?

A. Nothing in it.

C. Q. 69. Did you watch that seeder and the oil in it, so as to know its exact condition, from the 13th of June until the 16th of June, when you took the oil out and put it into pans, as you say?

A. Mr. Peck took care of that.

C. Q. 70. Then you don't know anything about the oil in this seeder from the time it went into the seeder or press-room on June 13th until you took it out on June 16th?

A. Nothing.

C. Q. 71. And you don't know, do you, of your own knowledge, whether upon June 16th the oil you took out of the seeder was the same oil or not that you melted on the 13th?

619 A. I do.

C. Q. 71½. And explain how you know it, if you had not seen the seeder for two or three days.

A. Well, because it wouldn't be allowed to be removed until the 16th.

C. Q. 72. Yes; but if any person had removed the oil and put some other oil in its place, you wouldn't know the difference, would you?

A. Well, I don't work in the press-room, so I would have to leave that to Mr. Peck.

C. Q. 73. And you don't know, do you, whether the oil which you took out of the seeder and put into a pan upon June 16th, as you have described, was the same oil which you melted upon June 13th, except because Mr. Peck or some other person told you so?

A. Well, I'm not sure, but I think it was.

C. Q. 74. Were these metal pans that you took the oil out of the seeder to put into on June 16th?

A. They were made of tin.

C. Q. 75. How deep was the oil in the pans and how many pans were there?

A. There were two pans and both pans were full.

C. Q. 76. What was the temperature of the oil when you put it into these pans on June 16th?

A. I don't know.

C. Q. 77. How did you get the oil in the pans?

A. I put it in with my hands.

C. Q. 78. Were there anything in the bottom of these pans or were they entirely empty when you put the oil in?

A. They were empty.

C. Q. 79. Did the pans then remain in this same press-room until the oil was again taken out of them?

620 A. Yes, sir; but we had them on ice to cool them off.

C. Q. 80. How long did you have these pans on ice to cool them off?

A. I couldn't tell you that. I had finished my part of the work.

C. Q. 81. You didn't have anything to do, then, with the oil after it went into the pans?

A. No, sir.

C. Q. 82. Do you know how long the oil staid in those pans on ice?

A. I could not tell you; I had to go back to my work.

C. Q. 83. What time of the day, upon June 16th, was the oil removed from the seeder and placed in those pans?

A. I don't remember.

C. Q. 84. Forenoon or afternoon?

A. Afternoon, I believe.

C. Q. 85. Do you know personally, of your own knowledge, what became of this oil which you put in the pans?

A. Mr. Peck took care of it.

C. Q. 86. You didn't see it afterwards, then?

A. Yes; I saw them putting it into the press.

C. Q. 87. What day was that?

A. On the 16th.

C. Q. 88. What time on the 16th?

A. It was put into the pans on the 16th, and into the press on the 17th; I made a mistake.

C. Q. 89. What time on the 17th was it put it into the press?

A. Mr. Peck had charge of it; I was not there when Mr. Peck put it in.

C. Q. 90. Who took the oil out of the pans, if you know?

621 A. Mr. Peck, I believe.

C. Q. 91. Did you see him?

A. No, sir.

C. Q. 92. Do you know, personally, how he got the oil out of the pans?

A. No, sir.

C. Q. 93. Did you see this oil from the time you put it into the pans until it flowed from the presses on June 17th?

A. I was not there when they were pressing it.

C. Q. 94. Did you put this oil, or rather the pans containing it, into ice water on June 16th?

A. I put the pans in a seeder and set ice around the pans.

C. Q. 95. Did you put the pans in an empty seeder containing this oil?

A. I did.

C. Q. 96. Was there any ice water surrounding these pans at all?

A. Not any; only what come from the ice.

C. Q. 97. What had these pans been used for that you put that oil in?

A. I don't know.

C. Q. 98. Did you put both pans in the same seeder?

A. I did.

C. Q. 99. Did you take all of the oil out of the single seeder and put it into these two pans?

A. No, sir.

C. Q. 100. Who has charge of the press-room of the defendant where this oil was put?

A. Mr. Peck superintends all.

C. Q. 101. Was the hasher you used in preparing this fat

622 the ordinary hasher used in the defendant's establishment?

A. The one we use every day.

C. Q. 102. What did you do to the oil while it was in the settling kettle—anything except turn the steam on it?

A. Nothing.

C. Q. 103. Did you know at the time you hashed this fat and put it into the kettle on June 13th what was going to be done with it?

A. I did not.

C. Q. 104. How much ice did you put around those two pans on June 16?

A. I should judge 150 pounds, chopped up fine.

C. Q. 105. When you dipped this oil out of the seeder and put it into those two pans, did you dip the oil out all from one place or from different parts of the seeder?

A. I just took it as it came.

C. Q. 106. You never have pressed any oil, have you?

A. No, sir.

C. Q. 107. At the time you melted this fat in the melting kettle on June 13th, did you stir it while it was melting?

A. I did.

C. Q. 108. Did you throw salt in while being melted?

A. I did.

C. Q. 109. Was the fat completely crushed and made pulpy by this hasher when it passed into the kettle?

A. What do you mean by that, hashed fine?

C. Q. 110. Yes; I mean hashed fine, and not only hashed fine, but forced by a powerful screw pressure in the hashing device through a series of small holes, so as to make a pulp or paste out of it.

623 A. It was.

Recess for dinner.

Redirect examination by Mr. HILL:

R. D. Q. 111. How many settling kettles did you draw the fat off into from the melting kettle?

A. One.

R. D. Q. 112. In the course of your examination the word kettles has been used. How came that word to be used instead of kettle, if you used only one?

A. I was asked how many settling kettles there was. There are two. I only filled one of them, though.

R. D. Q. 113. How many settling kettles are used to each melting kettle at defendant's works?

A. Two.

R. D. Q. 114. In cross-answer 65 you state that you don't know whether the seeders in the press-room were all like the one you put in there on the 13th, and in cross-answer 66 you say you are familiar with the seeders of the defendant, so that you know whether they are all alike or not; please explain what you mean by these answers, so far as they appear to be inconsistent with each other.

A. There's two sizes of seeders, and on that day I used the smallest size.

R. D. Q. 115. Do you know of any difference between them, except in point of size?

A. No, sir.

R. D. Q. 116, After you put that stock into the seeder on June 13th, and while it was there on June 16th, did you see it in passing through the room at any time or times?

Objected to as leading and as involving the witness in a
624 direct contradiction to the testimony herein given by him.

Respondent's counsel stated that he has no idea as to what the witness' answer will be, and that complainants' counsel, in referring to assumed previous testimony of the witness, probably has in mind only an assumption of his own, which may be found in cross-question 71½.

A. I have.

R. D. Q. 117. How often did you have occasion to pass along by that seeder in the ordinary discharge of your duties in the works.

A. Well, I pass through there two or three times a day sometimes.

R. D. Q. 118. In cross-answer 77 you state that when you took the stock from the seeder and put it into the pans you put it in with your hands; what was the condition of the stock when you took it out of the seeder and put it into the pans?

A. About the same as the stock they use every day—salvy like.

R. D. Q. 119. Fluid or mushy?

A. Mushy.

R. D. Q. 120. You state in cross-answer 86 that you saw them putting the stock into the press on the 17th, but in cross-answer 89 you say you were not there when Mr. Peck put it in, and in cross-answer 93 you say you were not there when they were pressing it. What idea did you mean to convey by these statements?

Objected to as incompetent, for the reason that the testimony of the witness relates to facts, not the conveyance of an idea.

625 A. Well, I meant I was not there all through the pressing.

R. D. Q. 121. Were you there at any time during the pressing? If so, how long?

A. Well, I was there for about 10 minutes at the latter end. Mr. Peck sent up for me.

R. D. Q. 122. You state that you put ice around the pans in the seeder and used, as you should judge, 150 lbs. of chopped-up ice for that purpose. Tell us how completely you surrounded the pans with ice, and how far the ice came up on the sides of pans, and whether you put any ice under the pans.

A. I put no ice under the pans, but put ice around the sides of the pans to within about two inches of the top.

R. D. Q. 123. Did you fill up all the space between the sides of the pans and the seeder with ice?

A. No, sir.

R. D. Q. 124. Just put it in the bottom of the seeder and heaped it up against the sides of the pans, did you?

A. Yes, sir.

R. D. Q. 125. And against the ends of the pans also?

A. Yes, sir.

Recross-examination by Mr. OFFIELD:

R. C. Q. 126. How many seeders upon the 13th of June last did the defendants have in use in their establishment, or in their establishment not in use, like the single seeder in which you put this experimental oil?

A. I could not tell you.

R. C. Q. 127. Come within a dozen of it.

A. I've got no idea of the amount of seeders they have got.

626 R. C. Q. 128. Have they fifty?

A. I couldn't tell you. I don't use the seeders at all.

R. C. Q. 129. But you have seen them, haven't you?

A. I have.

R. C. Q. 130. Have you seen fifty around there, do you think?

A. There must be more than fifty.

R. C. Q. 131. These seeders stand in the seeding or press room when they are not being filled from the melting kettles, do they not?

A. They stand where they can get room to shove them; there ain't no place for them to stand in.

R. C. Q. 132. The press-room and the seeder-room is one and the same room, is it not?

A. Yes.

R. C. Q. 133. How many seeders have you ever seen in that press-room at the same time? I don't call for the exact number, but as near as you can state it.

A. Well, I could not tell you; I have no idea. I don't work in the press-room; my work is upstairs, melting fat.

R. C. Q. 134. Do you think you have ever seen one hundred seeders at one time in that press-room?

A. Well, I think I have.

R. C. Q. 135. Did you put any private mark on that seeder in which you put that experimental oil June 13th, so that you could distinguish it from the rest of the seeders like it if it got mixed with them?

A. I did not.

R. C. Q. 136. Was that seeder in which you put the experimental oil in the same place, so far as you could tell, in the seeding-room when you took the oil out to put it in the pans that it was when you placed it in the room?

627 A. Yes, sir—that is, when I took the stock out. We call it stock.

R. C. Q. 137. But you noticed that the seeder had been moved, did you?

A. I don't think it was.

R. C. Q. 138. Did these pans in which you put the oil or stock June 16th stand up close against the sides of the empty seeder?

A. They stood right in the center of the empty seeder.

R. C. Q. 139. The two pans close together, side by side?

A. No; they stood about half a foot apart.

R. C. Q. 140. Did you put ice around those pans more than once?

A. No, sir.

R. C. Q. 141. This ice had a chance to melt and the oil or stock to go back to the temperature of the room several times over between the time you put the stock in the pan, on the 16th, and the time you were called up to look a few minutes at the presses, on the 17th, had it not?

A. All I put ice on it was once; whether Mr. Peck had more ice put on it or not I can't tell.

R. C. Q. 142. But if there wasn't more ice put on it the stock would

have gone back to the temperature of the seeding-room before the 17th, would it not?

Objected to as calling for mere guess-work.

A. I don't know. I don't know anything about the stock; Mr. Peck took care of the stock.

R. C. Q. 143. What means does the defendant use to keep a uniform temperature in this seeding-room?

628 A. I could not tell you; I don't work in the seeding-room; I don't know nothing at all about the seeding-room.

R. C. Q. 144. Who had charge of the seeding-room nights in defendant's factory when the process of seeding is going on?

A. Mr. Peck takes care of all of that.

R. C. Q. 145. Did Mr. Peck get you the place you now have?

A. I went to him and asked for work, and got it, like any one else would.

R. C. Q. 146. The scrap which is in the raw fat settles to the bottom of the melting kettles and is not drawn off into the other kettles, does it not?

A. It does.

GEORGE FITZMAURICE.

Subscribed and sworn to before me this 9th day of September, A. D. 1885.

EDWIN F. THURSTON,
Notary Public.

GILBERT A. PECK, a witness for the defendant, being produced, and being first sworn to tell the truth, the whole truth, and nothing but the truth in answer to interrogatories propounded to him by counsel for defendant, testifies as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Gilbert A. Peck; 6327 Wright street, Englewood; 34 years old; superintendent of the oleomargarine factory of the Fairbank Canning Company, at the Union Stock Yards.

629 Q. 2. You have been present and heard the testimony which Mr. Fitzmaurice has given in this case?

A. I have.

Q. 3. Did you receive from Mr. Fitzmaurice the pans of solidified stock which he testified he delivered to you?

A. I did.

Q. 4. State what you know of the preparation of this solidified stock before it was delivered to you.

A. Well, I superintended the matter from beginning to end. We took our fat out of the ordinary vats, such as we are using every day in the manufacture of oil, and Mr. Fitzmaurice hashed it as he described, and then rendered it under my direction, drawing it off from the melting kettle at 120 Fahrenheit and then allowing it to settle until all membrane or fiber had settled to the bottom of the settling kettle. It was then drawn off into one of our seeders and

allowed to grain, or seed, as it is sometimes called. In that seeder there were about 700 lbs. of this stock. We then filled up a square-cornered pan about 18 to 20 inches long, about a foot wide, and 14 inches deep, from the contents of the seeder. We then placed it in ice water to solidify until the whole mass was solid enough to retain its form in emptying out of the pans. The pan was turned bottom side up onto a board and the stock slipped out, and retained its form, nothing remaining in the pan. It was then sliced into cakes or slices about an inch in thickness and placed in cotton wrappers and pressed.

Q. 5. Referring to the stock which was solidified in the pan and pressed, as you have stated, was that stock composed of the entire material rendered from the raw fat (I mean, of course, with the exception of the scrap which had been removed)? In other
630 words, had anything been taken from or added to the rendered fat so as to affect in any way the pressing or the character of the products obtained?

A. There was nothing taken from it nor added to it. It was rendered and settled the same as we would render and settle any stock at that point of melting, namely, 120 F.

Q. 6. You have stated that this solidified stock was cut into slices, placed in cloths, and pressed. Was the press that was used one of the presses employed at the factory of the Fairbank Canning Company for pressing oleomargarine oil from the stearine in the usual process of your manufacture of oleomargarine oil there, or was some other press used?

A. It is a Boomer and Baucher press, manufactured for the express purpose of pressing oleomargarine stock, and one which we use in our regular work every day.

Q. 7. Did you, on the day of the test of 17th of June, 1885, subject the entire contents of the pan to pressure in this press as you have stated?

A. I did.

Q. 8. What amount of material was there in the solidified block which you turned out of the pan onto the board as you have stated?

A. 91 pounds, net weight.

Q. 9. After pressure in the cotton cloths, as you have testified, what amount of oil resulted and what amount of stearine remained in the cloths?

A. We had 55 pounds net of oil, and the balance remaining in the cloths was stearine.

Q. 10. These cakes of solidified stock which were placed in the cloths were, I suppose, placed between plates in the press in the usual manner?

631 A. They were.

Q. 11. What about the temperature of the plates?

A. The plates before using were placed in warm water at 100 degrees F., and then wiped off and put in the press the same as we usually do. I mean the plates were placed in the press as we usually do. We do not usually warm them.

Q. 12. You have testified that from the 91 lbs. of solidified stock you obtained by the pressure 55 lbs. of oil. What was the character and grade of this oil?

A. I should call it a good oil—oil such as obtained from fat rendered at 120° F.

Q. 13. Did you taste it and smell it?

A. I did.

Q. 14. State whether or not when tasting it you found any stickiness or adhesiveness to the palate, or any other peculiarity which distinguished it from good oil which you get at defendant's works, in the manufacture of oleomargarine oil from beef fat, when rendering it at 120° F.

A. There was nothing sticky about it; and perhaps a slight difference in the general appearance of the oil from the fact of its having been chilled more than we usually do; if anything, making the oil softer, showing, what we would usually say, less stearine than there would be in oil pressed from stock not chilled in this manner.

Q. 15. 55 pounds of oil from 91 lbs. of stock would be an amount of oil equal to between 60 and 61 per cent. of the amount of the stock, would it not?

A. I believe it would.

Q. 16. What did you do with the oil which you pressed out of the solidified stock that day and what did you do with the stearine?

632 A. Both oil and stearine were placed and sold with the manufacture of that day.

Q. 17. Who were present and witnessed that test besides yourself and the workmen employed in the factory?

A. Mr. John H. Hartog and Mr. Hill, counsel in this case.

Q. 18. Was Mr. Hartog there upon your invitation?

A. Mr. Hartog receives and inspects oil for Hartog & Fesel, parties to whom we consign oil in Holland; was there sampling oil that day, and I asked him to step over into the press-room and see it.

Q. 19. State whether or not he has the reputation of being a very experienced and skillful expert as to the quality and character of oleomargarine oil.

A. He is considered one of the best in Chicago, and inspects most of the oil manufactured here.

An adjournment was here taken to Wednesday, Sept. 9th, 1885, at 10 o'clock a. m.

WEDNESDAY, *Sept. 9th*, 1885—10 o'clock a. m.

Present: C. K. Offield, counsel for complainants, and L. Hill, counsel for defendant.

Met pursuant to adjournment.

Q. 20. You have stated that two pans were filled with stock. Did you use the stock of both these pans in the press in that experiment of June 17th?

A. We used but one. There were two pans made expressly for

the purpose. One of them was made last fall when Mr. Dixon was out there, and the pan became battered, not being used since then, and we chilled stock in both pans for fear the stock might stick to one pan on account of its being battered and uneven.

633 Q. 21. Where were those pans when the chilling operation was going on?

A. You mean when the stock was chilled, on June 16th?

Q. 22. Yes.

A. They were both placed in an empty seeder about 4 o'clock in the afternoon of the 16th.

Q. 23. How much ice was used in chilling the stock in those pans while they were in that seeder?

A. From the time they were placed in the seeder until pressing I should judge 650 to 700 lbs. of ice, the first ice amounting to about 300 lbs. On the evening of the 16th I added the balance of the ice at about 7 o'clock, the first ice having partly melted, owing to the warm room. I mean by warm our ordinary heat of seeding-room, namely, about 80° F. I then covered the seeder over and left it, so that if it were disturbed in any way I would know it the next morning.

Q. 24. How was it the next morning when you examined it, and had it been disturbed or not?

A. I found it in the same position and condition, other than part of the ice having melted; but the pans were surrounded with ice water and broken ice to within about half an inch of the top.

Q. 25. Referring to the stock as it was taken from the seeder to put into those pans to be chilled, will you state what was the condition of that stock as to consistency or fluidity when it was taken from the seeder and put into the pans?

A. There was nothing fluid about it. The stock had thoroughly grained and had become even, as regards consistency or char-

634 acter of the stock. I mean there by grained what is usually termed seeding. We took the seeder as we would any other in our business and thoroughly mixed its contents, so that the bottom, top, and center should all be of one consistency, filled the two pans, and pressed the balance of the stock with our pressing of that day.

Q. 26. You mean that the balance of the stock in that seeder which was not put into the two pans was pressed among your stock used in the general business of that day in the factory, do you?

A. I mean that it was pressed with our No. 1 stock; we make two qualities of oil. The stock was in the room where we seed our best quality—our number 1 quality.

Q. 27. How many seeders are ordinarily used in that room?

A. Usually about a hundred, depending upon the kind of seeder. We have two kinds or patterns of seeders, one being so constructed that it will require less space than the other; otherwise there is no difference.

Q. 28. Referring to the stock which you caused Mr. Geo. Fitzmaurice to melt, settle, and put into that seeder for the test of June

17th last, was that the same stock from which the pans were filled, as you have testified; and, if so, how do you know that it was?

A. It was the same stock. It was placed so that if it was moved I could readily detect it, it being the only seeder in the room that was not dated and numbered, the same as we do with our every-day work, there being no number or mark upon it.

Q. 29. In the prosecution of your business there do you put a date upon the seeders when you fill them with stock, and put a number on them at the same time?

635 A. We both number and date them. The date indicates when it was drawn off from the settling kettles and the number the quality or grade of stock.

Q. 30. Was there anything in the fat used for that experiment or in the method of treating it up to the time when it was placed in the pans for chilling that was different from your ordinary work when rendering fat for No. 1 oil at a temperature of 120° F.?

A. Nothing.

An adjournment was here taken to Thursday, Sept. 10th, 1885, at 11.30 o'clock a. m.

THURSDAY, *Sept. 10th*, 1885—11.30 a. m.

Met pursuant to adjournment.

Present: As before.

Q. 30½. When you pressed that panful of solidified stock on June 17th, as you have testified, what was the amount of pressure used and what is the limit of power of that press which you employed to press that material?

A. The press is registered at 190 tons, and we pressed it at its full capacity.

Q. 31. What is the amount of pressure that you ordinarily employ in pressing oleomargarine stock at defendant's works?

A. Well, do you speak of stock made from fat of the same character as this fat or of all fat?

Q. 32. I will ask you to answer the question first as referring to fat of the same character as this fat and secondly as referring to the different kinds of fat used in such manufacture.

A. Well, in all our No. 1 fat or fat we make our No. 1 oil from we run the presses at the full capacity. We melt some fat

636 there that yields much less oil, and if we press it too hard there is danger of getting stearine in our oil, so we have to be governed according to our stock.

Q. 33. In the melting part of the treatment of fats for oleomargarine purposes at the defendant's works why do you use the two settling kettles in connection with each melting kettle?

A. Well, to settle any light material or scrap that may have been drawn off from the melting kettle and whatever water there may be in the stock. I mean by water that which has been absorbed or soaked up by the fat in chilling before hashing.

Q. 34. What do you do with the scrap that is separated from the stock either in the melting kettle or in the settling kettle? Do you

in the prosecution of your ordinary business there have occasion to remelt any of that scrap and do you press out or drain out any liquid stock that may remain in it after drawing off the contents of the kettles?

A. We recook the scrap from the melting kettle and get a small percentage of stock out of it to use in number 3 oil. From the settling kettle it is mostly water, and whatever scrap may be there is of no value other than as a fertilizer. There is no oil or grease in it.

Q. 35. After remelting this scrap in order to get its remaining oil out of it do you simply drain off the oil you get out of it or do you press it out in any way?

A. Well, for oleomargarine purposes we skim it off. The scrap has to be pressed to get all water out of it before we can sell it as a fertilizer, as we sell it by weight, and we press it for no other purpose. Any greasy matter that we get by pressing is used for tallow.

Q. 36. Is this remelting of the scrap a regular and ordi-
637 nary practice at your works?

A. Yes, sir; as a matter of economy.

Q. 37. According to your best judgment and observation what proportion of water generally goes into the melting kettles with the raw fat?

A. That depends upon the character of the fat and the temperature of the water in which the fat is cooled. I should judge anywhere from 15 to 25 per cent.

Cross-examination by Mr. OFFIELD:

C. Q. 38. How long have you been employed by the defendant, The Fairbank Canning Co.?

A. Since a year ago last December.

C. Q. 39. What have been your duties during the entire time of this employment?

A. Superintendent of the oleomargarine department.

C. Q. 40. Do you mean by that the conversion of fats into what is known as oleomargarine oil and butter?

A. Oil only. We manufacture no butter.

C. Q. 41. Have you had the entire charge of the manufacture of oleomargarine oil by the defendants since December, 1884?

A. Yes; since December, 1883.

C. Q. 42. Where did you first learn the process for and the actual production of this oleomargarine oil?

A. While I was assistant superintendent of the Commercial Manufacturing Company in New York city.

C. Q. 43. The Commercial Manufacturing Co. identified by you in your last answer is one of the complainants in this case, is it not?

A. I believe it is.

C. Q. 44. Where did you work and what work did you
638 do prior to entering the employment of these defendants in December, 1883?

A. I don't know that I understand the question.

C. Q. 45. What is there about it that you don't understand?

A. How far back of December, '83, do you want me to go?

C. Q. 46. As far back as you can.

A. I have been occupied at several different branches of business. Just before entering into the oleomargarine business I was in business for myself in New York city manufacturing jewelry. That I gave up to go into this business with the Commercial Manufacturing Company.

C. Q. 47. When did you enter the employment of the Commercial Manufacturing Company and how long did you remain there?

A. I entered their employ in January, 1877, and remained with them until December, 1881, I believe.

C. Q. 48. What did you do while in their employment?

A. Well, as I have before stated, I was assistant superintendent of the company, my father being superintendent. In his absence at any time I had entire charge of the factory at 48th street, and when he was present at the factory most of the time had charge of the oil department. In addition to that I done a portion of the buying of the various materials that entered into their manufacture.

C. Q. 49. Did you leave the employment of the Commercial Manufacturing Company suddenly or of your own accord?

639 A. That is a question that to answer involves several things which would have to appear in this affidavit that I have no objections to, but, at the same time, have no bearing whatever upon this particular experiment.

C. Q. 50. Is this all the answer or explanation which you propose to make to the question?

Objected to as not proper cross-examination, but, as the witness has already stated that he has no objection to making an explanation of the facts, but does not consider them material or relevant to the matters about which he has been testifying, if complainants' counsel desires to have such irrelevant matters go upon the record and will indicate it by a question calling for them he will probably get them. They are, however, objected to in advance as immaterial and irrelevant.

Complainants' counsel replies that nothing could be farther from his wishes than to have inserted into the record irrelevant and inconsequential matter on the part of the witness, but that complainants' counsel shall insist upon such an examination of the witness as will disclose not only his capability but his fairness and his intentions towards these complainants in making the alleged experiment professed by the witness to have been carried on by him or at his dictation; and complainants' counsel suggests that the pre-existing relations of this witness towards these complainants are eminently proper so far as he may be interrogated in determining the question as to the weight which should be attached to his

640 deposition, and for that reason only the last interrogatories are propounded.

C. Q. 51. Were you discharged peremptorily from the employ of the Commercial Manufacturing Company?

A. That brings me back to my former statements, that here are

explanations to make which must be put down. The last two years that I was with the Commercial Manufacturing Co., while it may appear that I was in their employ alone, I was as much in the employ of H. K. and F. B. Thurber & Co., of New York, as I was of the Commercial Manufacturing Company, receiving my pay from said Thurber & Co. for the reason that I refused to accept Mr. James Wilson, Commercial Manufacturing Company, or anybody else that he might have connected with the Commercial Company, as pay for services rendered at 48th St. or anywhere else under Mr. Wilson's instructions; and Mr. Thurber guaranteed my pay, and I drew my pay weekly from Thurber & Co; and as early as October, '81, I asked Mr. Thurber to find some one to take my place, stating as a reason for it that I was tired and sick of the way things were being conducted, and that I could not serve both him and Wilson when each, as it looked to me—they were trying to cut one another's throats, and each wanting my assistance in the matter. I then and there asked Mr. Thurber to get some one to take my place, and also if he was satisfied that my transactions had been honorable and honest; to which he answered he was satisfied that I had done everything that I knew how to further the interests of both parties concerned, namely, Thurber & Wilson, and he did not care to have me leave, but if I wanted to he would like to know then and
641 there would I leave him before he had some one to take my place. I answered "no;" I would treat nobody that way as long as they dealt squarely with me. I told him I would like from him a letter at that time—what might be termed a letter of recommendation—and also to notify me as soon as possible when he would have some one to take my place. He gave me such a letter, which letter I wish to appear here, as I have the letter here.

Witness produces the letter and asks the examiner to copy it in the record. It is as follows:

"Houses in Europe, 115 & 117 Cannon St., London, 9 Rue Fay, Bordeaux; manufactory of food products, 85, 87, 89 Thomas St., N. Y.; canned goods factory, Moorestown, New Jersey.	Importers, manufacturers, grocers.	Bonded warehouses, 22 North street, New York; coffee-roasting establishment, 18 & 20 North St., New York; produce commission department, Duane & Hudson Sts., New York; honey department, 158 Duane street, New York.
P. O. box 3895.	H. K. & F. B. Thurber & Co., W. Broadway, Reade & Hudson Sts., New York.	

OCTOBER 15, 1881.

To whom it may concern:

Gilbert A. Peck has been for a long time in the employ of concerns that I have been connected with, and have been brought into

intimate personal relation with him, and recommend him in the strongest manner as to faithfulness and as to being entirely trustworthy and truthful, and I place the most implicit confidence in his honesty, and take pleasure in thus recommending him.

Respectfully yours, H. K. THURBER."

The witness resumes his answer:

He then stated that he would notify me when he had such party, but for me to say nothing to Wilson of the matter, and about the middle of December following he sent for me through my father and said he wanted to see me. He then and there told me that they were ready to dispense with my services; would pay me
642 one month's salary from that date forward, which he did, and we then and there parted company.

C. Q. 52. If you have exhausted entirely what appears to be your personal scandal and gossip relating to your alleged connection with Mr. Thurber, will you please answer the question, which is, whether you were peremptorily discharged from the employ of the Commercial Manufacturing Company and ordered further to absent yourself from their works at 48th street.

Objected to for the same reasons as above and because the question has been fully answered, and the remark about "scandal" in the question objected to for the reason that all the scandal there is in the above answer was drawn out by the complainants' counsel insisting upon it after being notified that his question would necessarily involve an explanation of the facts.

A. In the first place, I didn't consider it a peremptory discharge, as you call it, nor was I ordered to absent myself from their place of business at 48th street, nor Mr. James Wilson's office, for, after settling with Mr. Thurber, that very night I assisted in paying off the men employed in the factory, it being pay-night, and was in and out of the factory for two days following, and also Mr. Wilson's private office. I also settled up some money matters and turned the money over to H. K. Thurber, he being the agent of said Commercial Manufacturing Company, furnishing money for all bills that were made by my father and myself in our duties connected with the positions which we held, and, financially speaking, as far as I know, so to speak, the only commercial backbone they had.

643 C. Q. 53. For the third time I ask you if you were not peremptorily and emphatically discharged from the employment of the Commercial M'f'g Co. either by Mr. Wilson or some other officer in that company in authority. Please answer or refuse to answer.

Objected to as before, and also as incompetent, because the witness has stated the facts connected with his leaving the company, and the questions as to whether they amounted to a peremptory discharge as a mere matter of opinion, and besides the witness has expressed his opinion on the subject.

A. I answer emphatically no. I was not discharged by the Com-

mercial Manufacturing Company or any of its officers, having no dealings with any one outside of H. K. Thurber in the matter, and I have, to the best of my belief and knowledge, stated the facts and I think, exact words that passed between us that day.

C. Q. 54. Did the absence or disappearance of any of the small articles of personal property of the Commercial Manufacturing Company, such as press cloths, have anything to do with the severance of your connection, as you have stated, with the Commercial Manufacturing Company?

Same objections.

A. Not that I know of.

C. Q. 55. I have gathered from your statement that during the last two years of your connection with the Commercial Manufacturing Company you now profess to think that you were acting as a paid spy for one of the Mr. Thurbers. Is this correct?

644 Same objections, and further objected to as scandalous, improper, and a mere attempt to badger, annoy, and exasperate the witness.

A. I neither thought so at the time nor did I intend any such impression by my answer. Perhaps had I been willing to so act for either Mr. Thurber or Wilson I would have still been in the employ of one or the other, and most of the trouble that arose between Thurber, Wilson, and myself grew out of the fact that I would not so act for either.

C. Q. 56. Your father was foreman for the Commercial Manufacturing Company during the entire time you were there, was he?

A. My father was superintendent of the Commercial Manufacturing Company, not a foreman, during my whole time with them.

C. Q. 57. And was the superintendent of the Commercial Manufacturing Company for a considerable time after you left, was he?

A. I believe he left three days after I did, refusing to work with the man that had my place for various reasons that are entirely foreign to this particular case.

C. Q. 58. This professed letter of Mr. Thurber which you handed to the examiner is a type-writer affair, is it not?

A. In the first place, it is not a professed letter, but one that bears his signature, written by a pen and ink. The fact of the body of the letter being written by a type-writing machine is nothing more or less than the manner in which most everything in the shape of writing matter is conducted in his office, as far as I am concerned, and I believe to be his general way of writing business letters during the time I was connected with him.

645 C. Q. 59. In October, 1881, why did you consider it necessary to get an endorsement from Mr. Thurber in writing to the effect that, so far as he knew, you were honest and would tell the truth?

A. The principal reason for it was that I intended to leave, as I had already stated to Mr. Thurber, and I knew of certain transactions in connection with the business that would make it impossible

for me to stay, connected with both parties as I was, and I thought best to ask for a letter at that particular time. I also have another letter written by Mr. Thurber the day I left, *that* which, if anything, is a better recommendation than the above, which states that my services were only dispensed with in the reorganization of the department (I think it is) to which I was connected. I don't wish to put the defendants in this suit to the expense of printing the quarrels and wrangles that took place between Mr. Wilson, Thurber, and myself, although, so far as I am concerned personally, I have nothing to hide, and in this matter, as well as other business matters, I never make a statement that I cannot substantiate.

C. Q. 60. It would appear from this last professed letter of Mr. Thurber, that you don't produce, that your services were "dispensed with," or, in other words, that you were discharged. Now, isn't such the fact, that you were peremptorily and unexpectedly discharged from the employment of these complainants?

Objected to, 1st, as containing an unfounded assumption about what would appear from the letter, and, 2nd, as asking the same question which has been answered two or three times, and,
646 3rd, as immaterial and irrelevant both to the issue and the examination-in-chief.

A. In the first place, it is not an assumed letter. Like the one previous, it was given to me by Mr. Thurber and without solicitation on my part, which letter I will produce to-morrow; and, secondly, I am not aware that at that time H. K. Thurber was an officer of the Commercial Manufacturing Co. Perhaps he may have been, for it was a very difficult thing for me to tell who were officers of the company, and, as I have already stated, I notified Mr. Thurber in October that I wished to leave the employ as it then stood, and asked him to get somebody to take my place, and had nothing to do with any one else in the matter. You can construe the meaning of the word "dispense" or "dispensed with" as you see fit. I again answer emphatically in the face of the above facts that I was not discharged from the employ of the Commercial Manufacturing Company; neither was my father.

C. Q. 61. You will admit, will you not, that your man Fitzmaurice who has testified in this case was peremptorily and emphatically discharged from the employment of the complainants?

Objected to as irrelevant to the examination-in-chief. If it is proper to inquire into the circumstances of Mr. Fitzmaurice's leaving the company the inquiry should have been made of him while he was on the witness stand.

A. I will admit of nothing of the kind. Mr. Fitzmaurice, as well as many others, left the employ of the Commercial Manufacturing Company soon after I did of his own free will.

647 An adjournment was here taken to Friday, Sept. 11th, 1885, at 10 a. m.

FRIDAY, *Sept.* 11*th*, 1885—10 o'clock a. m.

Met pursuant to adjournment.
Parties present as before.

At beginning of examination witness produces the letter referred to by him yesterday as having been written voluntarily by Mr. H. K. Thurber in December, 1881, and given to witness, and asks that it be copied upon the record. It is as follows:

"Houses in Europe, 9 & 11 Fenchurch Ave., London, 9 Rue Fay, Bordeaux; manufactory of food products, 85, 87, 89 Thomas St., N. Y.; canned goods factory, Moorestown, New Jersey; P. O. box 3895.

Telegrams, Thurber, New York.

Food products.

Importers, manufacturers, exporters.

H. K. & F. B. Thurber & Co.,

W. Broadway, Reade & Hudson Sts.,

New York.

Bonded warehouses, 22 North street, New York; coffee-roasting establishment, 18 & 20 North St., New York; produce commission department, Duane & Hudson Sts., New York; flavoring extract and honey department, 171 Duane street, New York.

DECEMBER 13, 1881.

To whom it may concern:

Gilbert A. Peck has been in the employ of a concern with which I am connected for a number of years, and I know him to be thoroughly honest, straightforward, and a good young man, and cheerfully recommend him to any one who may have need of his services. They were only dispensed with in this concern because of a reorganization of the department with which he was connected.

Respectfully, etc., H. K. THURBER."

648 Notary states that there was a cut of a building representing Thurber & Co.'s establishment on both the letter-heads on which the two letters quoted in the record were written.

Counsel for both parties request the examiner to note on the record that they mutually agree and stipulate that defendant's time for taking testimony under the recent order of Judge Blodgett in this case be extended to expire on September 20th, 1885, instead of September 15th, 1885, and that the complainants' time for taking testimony under said order be correspondingly extended to expire on October 5th, 1885, instead of October 1st, 1885.

C. Q. 62. When did you next work and what work did you do after your services were dispensed with by the Commercial Co.?

A. I made an agreement with S. W. Hoyt, of the firm of Hoyt and Ohly, of New York city, to make butter for him.

C. Q. 63. Oleomargarine butter?

A. Yes, sir.

C. Q. 64. How long did you work for that firm?

A. Well, about 5 months.

C. Q. 65. Were your services dispensed with by that firm?

A. No, sir. In the first place, it was not a firm. It was merely S. W. Hoyt. Mr. Hoyt released me that I might take charge, as superintendent, of the works of, as it then existed, Alderny Manufacturing Co., which was afterward changed to the Jersey Dairy Company of New York.

649 C. Q. 66. How long did you work for these last companies?

A. Well, I can't date the exact day, but it was from some time in May, 1882, to the 1st of August, 1883. I mean by first of August the forep art of August.

C. Q. 67. Where did you next work after the 1st of August, 1883, and what work did you do?

A. In September, 1883, I went to work for G. F. Swift, Union Stock Yards, town of Lake, in a general way in the factory, having no particular position. I remained there 7 or 8 weeks and from there returned to New York.

C. Q. 68. What did you do in New York?

A. I was in no business.

C. Q. 69. This experiment which you tried in the defendant's factory from June 13th to 17th was directed solely and exclusively by yourself, was it not?

A. Please explain what you mean by directed.

C. Q. 70. I mean that you ordered and controlled it in every particular?

A. Well, partially—that is, under the direction of Mr. Hill, one of defendant's counsel, he and Mr. Vogel, of the Fairbank Canning Company, having requested me to render some fat taken from the fat that we were working that day and have it rendered at a temperature not to exceed 120° F.; to settle the stock in the usual way as we conducted our business there; to allow it to seed and then to place it in the pans square cornered and chill it with ice or ice water, or both, until it had solidified enough to retain its form by turning the pan upside down; then to slice it in slices about one inch in thickness and press it in our usual way—press the chilled stock until the oil had been extracted—and then to weigh my
650 oil and see what I had. I gave the man Fitzmaurice the matter in charge, under my supervision, not stating to him what it was for. I watched it throughout and have testified as to the result.

C. Q. 71. When was the first time that you knew that you were going to order this experiment?

A. Do I understand you to mean the melting and pressing of fat in this particular experiment?

C. Q. 72. Any experiment of this kind in behalf of defendant.

A. The first that I knew of this experiment was a day or two before that, when Mr. Hill was introduced to me by Mr. Vogel. He then stated what he wanted to do, namely, rendering fat at 120 F., settling, chilling, and pressing the stock as I have described. I told him I was too busy to attend to it that day, but if he would

call on the 13th of June we would then try it. I do not remember whether he was present at the hashing and melting of the fat or not, but was part of the time during the chilling and all the time during the pressing operation.

Last fall Mr. Dixon, of the firm of Hill & Dixon, came to our works—I don't now remember the date—and I then chilled and pressed some stock under his direction, the result of which I think at the time or later on, I don't remember which, I made an affidavit to.

C. Q. 73. When you made these experiments you understood perfectly well that you were expected to produce certain results by them, did you not?

A. Well, partially. Both Mr. Dixon and Hill told me that by doing it that way they thought I would get in the neighborhood of about 60 per cent. of oleomargarine oil, and asked me what I thought about it. I told them I had given the matter no thought
651 whatever, but would try it and see what would be the result. At the time of either experiment I was not aware that I was to make an affidavit to it, and when requested so to do—that is, to make an affidavit—I told Mr. Vogel and both Mr. Dixon and Hill that, if it were possible, I preferred to have nothing to do with the case, but that as far as I was concerned personally it made but little difference one way or the other whether I testified or not, but should I testify in the case the probability was that the opposite side would draw in a lot of stuff that had nothing whatever to do with the case or its merits, but that as I was in the employ of the Fairbank Canning Company that I would try to carry out their wishes, unless it involved (which I had no idea it would) something that I might consider wrong for me to do.

C. Q. 74. Who selected the fat to be used in this experiment of last June?

A. There was no particular selection made any more than to have it a fair average of what we were working that day. It was forked out of a large vat containing several thousand pounds of fat.

C. Q. 75. Who forked it out?

A. I believe Mr. Fitzmaurice. I am not positive as to that. I was present at the time it was forked out and saw it taken to the hasher, and that no other fat that we were working got mixed with it.

C. Q. 76. Who melted the fat?

A. Mr. Fitzmaurice, under my direction.

C. Q. 77. Were you present during the whole operation of melting?

Ans. I was.

C. Q. 78. How long did it take to melt this fat?

652 A. I did not time it. I should judge an hour and three-quarters to two hours.

C. Q. 79. How long did this melting fat stand in the melting kettle before it was drawn off into the other or settling kettle?

A. I did not time it. I should judge about 20 minutes, as that is our usual time for settling, providing the kettle settles what we term clear.

C. Q. 80. How long did this melted fat remain in the settling kettle on June 13 before it was drawn off into the seeder?

A. I should judge about an hour and a half to an hour and three-quarters. I did not time any of it; not to exceed an hour and three-quarters.

C. Q. 81. Were you present on the 13th all the time the fat remained in the settling kettle?

A. I was—that is, I was not out of the settling or seeding room until we had drawn off and placed it to seed in the seeding-room.

C. Q. 82. Who actually drew this melted fat off into the seeder and then moved the seeder into the seeding-room on the 13th?

A. Well, Mr. Fitzmaurice handled the draw-pipe and I stood alongside of the seeder, and together we pushed it to its position, where it was left to seed—that is, pushed the seeder.

C. Q. 83. How much melted fat was there in that seeder that was left to seed?

A. Do I understand by fat that you mean stock composed of oleomargarine oil and stearine?

C. Q. 84. Exactly.

A. I should judge 650 to 700 pounds; didn't weigh it.
653 Perhaps there might have been a little less, as we only melted what I considered enough fat when rendered to be a fair amount of what we put in one seeder at a time.

C. Q. 85. How near did this melted fat come to the top of the seeder when it was first put in on June 13th?

A. I should judge within four inches—perhaps 4½.

C. Q. 86. Was that seeder on wheels, so that it could be moved about easily?

A. Yes, sir; but there was other stock placed around it of the general melting of the day, so that it could not be moved without moving other seeders first; and had they been moved or this one moved I could easily detect it, as in moving of a seeder containing stock you necessarily disturb the seeding operation and is easily detected.

C. Q. 87. Were the other seeders on wheels, so that they could be easily moved?

A. Yes, sir; our seeders are all on wheels.

Recess for dinner.

C. Q. 88. What was the temperature of the room in which this experimental seeder was placed on June 13th and during the entire time it remained there until the 16th?

A. I tested it several times and found it stood 80° F., or about 80° or 81°.

C. Q. 89. How much of the time was you in this seeding-room between the time the seeder was placed in it June 13th and the time the melted fat was surrounded by ice on June 16th?

A. Once or twice each hour during each day up to 7 or half past 7 at night.

C. Q. 90. You were not there at night at all between the 13th and 16th?

654 A. Not after going home.

C. Q. 91. You don't know but that while you were away some person around the establishment or interested in this matter may have poured or inserted a considerable quantity of pure oleomargarine oil from which the stearine had been extracted into the seeder, or perhaps in the day-time while you were out of the room, do you?

A. I instructed both men that has charge of presses at day and night to keep an eye upon that seeder and not to leave the room unless I was present, and that if anybody, at either day or night, attempted to add to or take from the contents of that seeder or tamper with it in any way to send some one for me immediately, be it night or day.

C. Q. 92. How did it happen that your suspicions were aroused in this direction to an extent that would necessitate this order?

A. I had no suspicion whatever. Sometimes in filling a press with stock we may have a little left from a seeder, more than a press will hold, and, on the other hand, we may need a little extra stock to fill a press, and it is our custom to take whatever may be left and put it into one of the other seeders, and if we are short of stock to take from one of the other seeders, and I didn't want any taken from or added to this in that way, as I wanted to see what would be the result of the stock in this particular seeder.

C. Q. 93. All the melted fat in that seeding-room had been treated in exactly the same way as that in this particular seeder, hadn't it?

A. The balance of the melted fat or stock had been melted at considerable above 120° F. The fat before hashing was treated the same. After melting it had been treated the same.

655 C. Q. 94. How long a time did you keep this melted fat packed with ice in those pans?

A. I think we put the stock in the pans about 4 o'clock p. m., and we immediately surrounded it with ice and ice water—that is, water that had melted from this ice—and it remained there until the next morning in the neighborhood of 10 o'clock; I don't remember exactly the time, although I may have given the time on direct examination, but many things have been brought into this cross-examination that my memory may be at fault as to exact time.

C. Q. 95. How long was it after you dumped this chilled product out of the ice pan on the 17th of June before you cut it into cakes or slices and put it into presses?

A. It was sliced immediately, each slice being put into the wrapper before another one was cut off, and immediately put into the press?

C. Q. 96. How hard or cold was the product at the time it was sliced?

A. It was quite hard, so much so that it required considerable pressure to force the cleaver through the stock. The blade of cleaver was held in both hands and pressed through it. I did not test it with the thermometer.

C. Q. 97. How hard and cold was this product when the pressure was actually applied to it in the presses?

A. So hard that we had quite some pressure upon it before any

oil came through the wrappers. As to its being cold, I think it was very near the same as when it was sliced. I did not test it with the thermometer.

C. Q. 98. This chilled product was wrapped in your usual press cloths in the presses, was it?

A. Yes, sir; clean cloths that had just been washed and dried.

656 C. Q. 99. It would take much more ice and a greater length of time to stiffen and harden pure oleomargarine oil than it would the stock from which the stearine had not been extracted, would it not?

A. Yes, sir.

C. Q. 100. Was all this stock that you dumped from the ice pan on the 17th cut up and put in the press and all pressed at the same time?

A. Yes, sir.

C. Q. 101. How long did it take to extract the oil by this pressure as you have described?

A. I should judge about three hours.

C. Q. 102. Was any other stock in the press with this chilled product?

A. There was no stock. The press had been used and run down just before this, and we had a pan that was made expressly for it, with a pipe attached for the oil to run off, placed on top of an iron plate that was on top of what remained in the press. The pan was tight or no holes in it other than where the pipe was attached, and the stock or the wrappers containing the stock that had been refrigerated was placed in this pan and a plate on top, stock again, and so on until we had it all in.

C. Q. 103. Was this pan in which this chilled product was placed heated above the temperature of the room?

A. No, sir; no heat applied to it.

C. Q. 104. How many plates did you use, and what was their size?

A. I think we had four plates about 26 inches wide, 35 to 36 inches long. I should judge a little less than a quarter of an inch thick—yes; considerably less than a quarter of an inch thick.

657 C. Q. 105. How hot or warm were those plates when placed in contact with the cloths on the chilled product?

A. They had been placed in warm water, heated to 100° F., taken out of said water, wiped off, and placed in the press.

C. Q. 106. Yes; the water was 100°, as I understand you, but how warm were the plates?

A. I should judge about 90° F.

C. Q. 107. Have you ever in your experience had the steam shut off from the seeding-room and the room become cold until the product was chilled until you could cut it with a knife?

Objected to as new matter, and not referred to in the examination-in-chief, and irrelevant thereto.

A. Yes, sir; but the stock had not been properly seeded; therefore we did not press it. It would not seed if it had chilled and hard.

C. Q. 108. What did you do with such chilled stock if you did not press it?

Same objection.

A. Took it back to the melting kettles and remelted it as fat with unmelted fat.

C. Q. 109. Was there any water in the bottom of this seeder into which you ran the melted fat on June 13th?

A. No, sir.

C. Q. 110. What would have been the effect upon the product, if you know, had there been a layer of warm water upon the bottom of that seeder?

Same objection, and further objected to as calling for a
658 mere opinion upon a matter which it does not appear the witness ever tested or informed himself.

A. I could not say.

C. Q. 111. Do you not take great pains not to have any water in the bottoms of your seeders when you put the stock in them?

A. Yes, sir.

C. Q. 112. Why do you do that?

A. In the first place, the water that might get there in the course of melting would be the water absorbed by the fat while cooling before hashing, and would contain more or less blood that might be in the fat, and, if allowed to get into the seeder in a room as warm as our press-room, would stink very soon; and, in the second place, the stinking water would destroy the product for oleomargarine oil.

C. Q. 113. You know, as a practical workman, do you not, that any water, no matter how clean and pure it is when it goes into the bottom of a seeder, will "stink" the product if it remains there while seeding is going on?

Objected to as calling for an opinion not shown to be based on any actual experiment or observation and irrelevant to the examination-in-chief.

A. I have never seen any clean water in a seeder that way, and could not say what might be the result.

C. Q. 114. Have you ever seen any water with blood in it—in a seeder?

A. I have seen water that had a bloody appearance.

C. Q. 115. Were you present during the entire three or four hours when that press was operating upon the product from those ice-pans on the 17th?

A. I was.

659 C. Q. 116. How long do you suppose it took that stock, after it was put into the presses, to go back to the natural temperature of the room?

A. I don't think it went back to the natural temperature of the room—that is, the whole stock—from the fact that the cakes of the stearine were cooler than the hand when taken out—that is, felt cool in the hand.

C. Q. 117. Who were present during that pressing on the 17th?

A. Mr. Hill, John H. Hartog, of Chicago, and myself; and Mr. Vogel, of the Fairbank Canning Company, came in occasionally.

C. Q. 118. Was Mr. Hartog there all the time?

A. I believe he was. If he went out it was once when, I think, he may have been called to the telephone. He wasn't gone over 5 minutes, anyhow.

C. Q. 119. What was he there for?

A. He was invited by Mr. Vogel, Mr. Hill, and myself to see the pressing and give an opinion as to the quality of the oil.

C. Q. 120. Is Mr. Hartog a relative of any of the officers of your company?

A. No, sir; not that I know of.

C. Q. 121. Did you make any tests of any kind with this oil which flowed from the press on the 17th?

A. Nothing, other than tasting it.

C. Q. 122. What did this oil run into from the press?

A. A tin pan.

C. Q. 123. How much did the tin pan hold?

A. I should judge it would hold about 100 pounds.

C. Q. 124. How much weight of oil did you get from the press on the 17th?

660 A. Fifty-five pounds net.

C. Q. 125. Did you weigh the stearine?

A. We weighed the stearine and wrappers together. I don't remember the weight of the stearine.

C. Q. 126. How much did the stearine and wrappers weigh?

A. I don't remember.

C. Q. 127. Was this Mr. Fitzmaurice present when you were giving your testimony on your direct examination?

A. I think he was here a short time, but not all the time.

C. Q. 128. What was done with the stock which was chilled in that second ice-pan, and which you did not press?

A. Put back into the kettle and remelted with the raw fat.

C. Q. 129. How many pounds of stock do you usually place in one of those presses to be acted upon at one time?

A. Well, from 13 to 15 hundred pounds, owing to the kind of stock.

C. Q. 130. How long usually does it take you to press this stock of 13 or 15 hundred pounds?

A. That depends upon the stock.

C. Q. 131. Well, stock like this with which you made this experiment.

A. Well, I should think anywhere from one hour and three-quarters to two hours and a quarter, owing to the speed of our engines.

C. Q. 132. How long would it take you to press 91 pounds of your stock like that melted on the 13th of June, provided you didn't chill it and pressed it in the same manner and with the same press you used in your alleged experiment?

661 Objected to as irrelevant and immaterial.

A. Something I couldn't answer. I never pressed such a small amount of stock.

Redirect examination by Mr. HILL:

R. D. Q. 133. Referring to the letters from Mr. Thurber copied upon the record in your cross-examination, were they written and signed by Mr. Thurber in your presence or not?

A. I was present when he dictated them to his short-hand writer, and also when he signed them.

R. D. Q. 134. If you have those two letters here will you please hand them to the examiner and let him mark them for identification?

A. I will.

Witness hands the letters to the examiner. I write upon them the following: "Thurber letter No. 1" and "Thurber letter No. 2," respectively, together with my signature and date.

R. D. Q. 135. In your cross-examination you stated that Mr. Fitzmaurice left the employ of the Commercial Manufacturing Company of his own free will soon after you did. Did you state that of your own personal knowledge or upon information derived from others?

A. Information derived from others.

R. D. Q. 136. The operation which you have variously termed "seeding" and "graining" is the crystallization of the stock, is it not?

A. Yes, sir; it is.

R. D. Q. 137. In your cross-examination you referred to having chilled and pressed some stock, under Mr. Dixon's direction,
662 last fall. What was the result of that operation as to quality and quantity of oil obtained, if you remember?

A. As to quality, it was good No. 1 oil, and as to quantity, if my memory serves me right, was nearly the same as in the experiment of June 17th.

R. D. Q. 138. At the time when you told Mr. Dixon last fall that you had given the matter no thought whatever, but would try it and see what would be the result, did Mr. Dixon tell you of the alleged experiment made at Brighton, Mass., made by complainants' experts, and its alleged results, as testified to by them?

A. He told me there had been an experiment made by some one and, if I remember right, that its yield in oil was something like 90 or a little over 90 per cent. He asked me if I didn't think that was an excess. He said something about another experiment, if I remember right; that is, in regard to the pressing, I think. I think he said that the experiment that got the excess of oil used hot or warm plates—hot, I think he said—and that the stock where cold plates were used—I think he used the word cold plates; I don't remember it clearly, it was so long ago—at any rate, there were two experiments made and one got a good deal more of oil than the other. He then asked me, if we chilled stock and pressed it as we did on June 16th and 17th, if I thought we would get anything near 60 per cent. of oil. I told him I had never tried it, but would do it

as he requested, but I thought it would yield something near that. This is, as near as I can remember, what conversation passed between us.

R. D. Q. 139. In the experiment of June 17, were the slicing, wrapping, putting into the press, and turning on the pressure conducted as rapidly as could be conveniently done?

663 A. Yes, sir.

R. D. Q. 140. Was there any stock in the press during the operation except the chilled stock taken from the chilling-pan, as you have testified?

A. None whatever.

R. D. Q. 141. Did the fifty-five pounds of oleomargarine result solely from that chilled stock thus placed in the press?

A. It did.

R. D. Q. 142. You state that you made no test of the resulting oil on June 17th, other than tasting it. Has your experience been such that you can determine the quality and grade of oleomargarine oil by tasting it?

A. That's the way we grade our oil.

R. D. Q. 143. At what part of the pressing operation on June 17th did you taste the resulting oil?

A. Several times during the pressing and when we were through pressing.

R. D. Q. 144. In any of those tests did you notice any stickiness in the oil or any adhesion of it to the palate or mouth?

A. None whatever.

R. D. Q. 145. Was the resulting oil a thin, fine oil or a thick or viscid oil?

A. It was a thin oil—what I would call a soft oil.

R. D. Q. 146. You state that Mr. Fitzmaurice was present a short time while you were testifying on your direct examination; he was examined in chief before you were, was he not?

A. He was.

GILBERT A. PECK.

664 Subscribed and sworn to before me this 11th day of September, A. D. 1885.

EDWIN L. THURSTON,
Notary Public.

An adjournment was here taken to Saturday, September 12th, 1885, at 11 o'clock a. m.

SATURDAY, *September 12th*, 1885—11 o'clock a. m.

Met pursuant to adjournment.
Parties present by same counsel as before.
Adjourned until 1.30 p. m.

1.30 P. M.

Present: Mr. Towle for compl't and Mr. Hill for def't.

JOHN H. FITZMAURICE, a witness for the defendant, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testifies as follows in answer to interrogatories propounded by Mr. HILL, counsel for defendant:

Q. 1. What is your name, age, residence, and occupation?

A. My age is 24; 2334 Winter St.; I work in the press-room at Fairbank Canning Co.'s works, Union Stock Yards; my name is John H. Fitzmaurice.

Q. 2. Did you work there in June, 1885?

A. Yes, sir.

Q. 3. Who had charge of the press-room there in June, 1885, during the day-time, under the general direction of Mr. Peck, the superintendent?

A. I did.

Q. 4. Do you remember anything about Mr. Peck's leaving a seeder, with stock there, about June 13th, which remained in
665 process of seeding until the afternoon of June 16th, and his giving any directions to have that seeder looked after any more carefully than usual?

A. Yes, sir; I do.

Q. 5. While that stock was seeding in that seeder did you have charge of the press-room during the day-time each day?

A. Yes, sir.

Q. 6. At what time in the morning did you go on duty, and what time in the evening did you go off duty during those days?

A. I went on duty at 7 o'clock in the morning and got through at half past 5 in the evening.

Q. 7. From half past 5 in the evening, through the night, till 7 o'clock in the morning, during those days, who had charge of the room in your place?

A. Thomas Whalen, who is here present.

Q. 8. What instruction, if any, did Mr. Peck give you with regard to that particular charge of stock which was under process of seeding from June 13th to the afternoon of June 16th?

A. Mr. Peck told me to see that that seeder was not disturbed in any way—to see that nothing was put into it or taken out of it in any shape or form.

Q. 9. Did you obey his instructions?

A. I did, sir.

Q. 10. Were you in that room all the time between 7 o'clock in the morning and half past 5 in the evening of each day while that particular charge was seeding and in the seeder?

A. Yes, sir; I was.

Q. 11. Was that seeder disturbed or anything put into
666 it or taken out of it in any shape or form while that stock was in it?

A. No, sir.

Cross-examination by H. S. TOWLE, Esq., counsel for complainants:

C. Q. 12. How long have you been in the employ of Fairbank Canning Company?

A. About 14 months.

C. Q. 13. What business did you follow before you entered the employ of this company?

A. I was porter in a wholesale pin-house.

C. Q. 14. By whom were you employed?

A. August Gaylord, 10 & 12 Thomas St., New York.

C. Q. 15. Had you any experience in connection with the manufacture of oleomargarine stock or oil previous to entering the employ of the defendant in this suit?

A. Yes; I worked in the Commercial about 7 years ago.

C. Q. 16. Who employed you then, and at what place did you work?

A. I think it was Mr. Easterbrook. I worked in the butter department, 48th St., New York city.

C. Q. 17. How long were you in the employ of the Commercial Company?

A. About a year. I guess it was about a year altogether.

C. Q. 18. Why did you leave the employ of this company?

A. They got very slack, and I got laid off.

C. Q. 19. Were you not discharged from their employ?

Objected to as utterly immaterial and irrelevant.

667 A. No, sir; they were pretty near all laid off. Very few were kept on at the time.

C. Q. 20. How many men remained in the employ of the company when you left there?

Same objection.

A. Something I couldn't say.

C. Q. 21. About how many? Did they continue to employ fifty or a hundred?

Same objection.

A. I couldn't say.

C. Q. 22. What are your particular duties at the Fairbank Canning Company?

A. I run the presses.

C. Q. 23. At what temperature is the press-room kept?

A. Between 80 and 85.

C. Q. 24. What is the size of this press-room?

A. I couldn't say.

C. Q. 25. Is it a very large room?

A. Yes; good size.

C. Q. 26. Who besides yourself is employed in this room between 7 in the morning and 5 in the evening?

A. Well, at that time there was about 8 men in the room and about 3 boys.

C. Q. 27. How many doors or entrances has this room?

A. Five doors.

C. Q. 28. Does any one come in and go out of this room besides the men employed within the same?

A. Only the men employed in the building, who might occasionally walk through. No strangers are allowed.

C. Q. 29. As I understand you, then, workmen in going from one part of the building to another pass through this room when they so desire. Is this correct?

668 A. They very seldom come down there except they come on business. When they come down there they generally want something—some machinery or other.

C. Q. 30. Are persons employed in the building prohibited from coming into or passing through this room?

A. They have got no business down there unless they are sent down there after something.

C. Q. 31. Can come in there if they want to, can they not?

A. Well, yes; they can come in, and if any one comes in I can see them.

C. Q. 32. How many presses are used in this room?

A. At that time we only had five.

C. Q. 33. Each press in charge of a pressman?

A. I run the five.

C. Q. 34. How much of your time was required in June, 1885, in looking after these five presses?

A. From 7 o'clock in the morning till half past 5 in the evening.

C. Q. 35. Do presses such as you use at the factory of the Fairbank Canning Co. require much attention?

A. Yes; they need careful watching.

C. Q. 36. And it is your duty, as I understand it, to look after all of these 5 presses. Is this so?

A. Yes, sir.

C. Q. 37. When you are looking after these presses can you see all of the five doors opening into the room?

A. I can see anybody that crosses the room.

C. Q. 38. Would you know whether any one came in at any one of these doors if you were not looking in the direction of the door through which the person entered?

669 A. If they came from down-stairs they would have to go out through the engine-room. Then there's a door on the other side; if they came in that door they would have to cross the room, and I would see them.

C. Q. 39. If a person should have come from down-stairs and passed out through the engine-room they would not have been seen by you. Is this so?

A. Yes; I would have seen them if I was in that end of the room at the time. The press-room is all one big room.

C. Q. 40. You have only accounted for two of the doors. Would you have known of the entrance of any one at either of the other three doors if you had not been looking that way at the time?

Ans. Yes; I would; because they would have had to come right through the room to get out again.

C. Q. 41. Could not a person have come and gone out of the room by the same door?

A. I don't think that they could while I was in the room without my seeing them.

C. Q. 42. How far from the end of the press-room opening into the engine-room was this seeder placed about which you have testified?

A. I couldn't say exactly.

C. Q. 43. Was it placed in a portion of the press-room which was near the engine-room?

A. The seeder was placed in about the center of the press-room, surrounded by other seeders.

C. Q. 44. You have testified that this seeder containing stock was placed in this room on the 13th day of June, 1885. How do you know the day of the month?

A. I remember the day it was placed there, because Mr. Peck
670 told me to watch that seeder particular, and not to have it disturbed in any way, and to see that nothing was put into it or taken out of it.

C. Q. 45. How do you know it was the 13th day of June he told you this?

A. Why, it is very seldom he ever tells me to watch a seeder like that, and it is remarkable.

C. Q. 46. May it not have been on the 20th day of June, so far as you know, instead of the 13th?

A. No; I am sure it was on the 13th of June; positively.

C. Q. 47. Are you sure of it because Mr. Peck told you so?

A. No; I remember it myself.

C. Q. 48. Between the 13th and 16th of June were all of the 5 presses in use in your room?

A. I believe they were.

C. Q. 49. Did you not have occasion to leave this room now and then between 7 in the morning and half past 5 in the evening?

A. I very seldom ever leave the room.

C. Q. 50. You had to leave it sometimes, did you not?

A. Sometimes in the day I go upstairs for a few minutes.

C. Q. 51. You attended to your regular duties and looked after the presses between the 13th and 16th days of June, '85, did you not?

A. Yes, sir; I did.

C. Q. 52. Did you sit down and watch this particular seeder during any considerable portion of the time?

A. No, sir; I had to keep walking up and down, watching the stock in the press.

671 C. Q. 53. Have you had any conversation with Mr. Peck about the testimony you were to give here to-day?

A. No, sir; not in particular.

C. Q. 54. Have you not talked together about the testimony you were to give?

A. No, sir; no more than about what happened at that time.

C. Q. 55. Are you related to George Fitzmaurice, who has previously testified in this cause?

A. Yes, sir; he is my brother.

C. Q. 56. Have you talked with him about this matter and the testimony which he gave?

A. No, sir; I have not. We don't live in the same house, and it's very seldom we speak to each other in the shop.

C. Q. 57. Are you here to-day at the request of Mr. Peck, or were you subpœnaed to come here as a witness?

A. At Mr. Peck's request.

Redirect examination by Mr. HILL:

R. D. Q. 58. While that stock was in that particular seeder could anybody have come into the room and gone to the seeder while you were on duty in the room without your knowing it?

A. They could not disturb that seeder in any way without me knowing it.

R. D. Q. 59. Was that seeder dated and numbered like the rest of seeders?

A. No, sir; it had no mark on it.

R. D. Q. 60. Did you ever know any other seeder there to be filled up and seeded without being marked?

A. No, sir; they all have the day of the month on it.

672 R. D. Q. 61. Do you think any one could have entered the room and gone to that seeder while you were on duty there without your seeing it?

A. Not without my knowing it; no.

Recross-examination by Mr. TOWLE:

R. C. Q. 62. Between the 13th and 16th of June, 1885, while this particular seeder was in the room, did you not look after the 5 presses under your charge as usual?

A. I did.

R. C. Q. 63. Did you not during those days leave the room and go upstairs as you have testified that you had to occasionally?

A. I don't remember leaving the room at the time.

R. C. Q. 64. Is it not a fact that you usually leave the press-room at least once every day, if not oftener?

A. Well, when I do leave the room it is only for a few moments, and that is very seldom.

R. C. Q. 65. Do you not leave it every day for a few moments?

A. I can't say that I leave it every day for a few moments. Sometimes I don't leave it all day.

R. C. Q. 66. Is it not usual for you to leave the press-room for a few moments nearly every day, if not every day?

A. Well, I never leave the press-room unless I want to go up to the water-closet, or something like that. I eat my lunch in the press-room.

R. C. Q. 67. Were you looking at or towards that particular seeder all the time while it was in your room?

A. Yes; I saw that it wasn't disturbed.

673 R. C. Q. 68. Was the position of the seeder such that your eyes were upon it all the time when you were looking after the presses?

A. Yes, sir; it was.

R. C. Q. 69. Do you pretend to say that you could attend to your duties about these presses and to be watching this seeder every moment during the day?

A. I don't say that I could watch it every moment, but I know that seeder wasn't disturbed in any way.

Re-redirect examination:

R. R. D. Q. 70. When Mr. Peck placed that seeder and its contents in your charge and directed you to see that it was not disturbed, state whether or not he instructed you not to leave the room, and if you should be obliged to leave the room at any time to send for him to remain there while you were away.

A. He didn't say anything about leaving the room. It's very seldom I leave the room, and he told me if that seeder was disturbed in any way to send for him.

R. R. D. Q. 71. While that seeder was in your charge, as you have stated, could any one get at it without moving the other seeders which surrounded it?

A. No, sir.

Re-recross-examination:

R. R. C. Q. 72. How near together were these seeders placed?

A. They were set right close together—one right up against the other.

R. R. C. Q. 73. How many of these seeders were together in the room at this particular time?

A. I couldn't say exactly.

674 R. R. C. Q. 74. About how many?

A. I couldn't say.

R. R. C. Q. 75. More than a dozen?

A. I couldn't say exactly how many. I know that seeder was surrounded by seeders, but I don't know how many.

R. R. C. Q. 76. Were these seeders, at the time referred to, placed any nearer together than is usual?

A. No, sir; they are always set close together.

R. R. C. Q. 77. About how many of these seeders do you generally have placed near together, as you have stated—that is, at one time?

Objected to as immaterial and irrelevant.

A. I couldn't say.

R. R. C. Q. 78. Did Mr. Peck call your attention to this particular seeder after it was surrounded by the other seeders which you have referred to?

A. Yes, sir; he did.

R. R. C. Q. 79. I suppose, then, you could only see the top of the seeder when thus surrounded. Is this so?

A. Yes, sir; I could see the top of it. If it was disturbed in any way I could tell it.

R. R. C. Q. 80. In what particulars did this seeder, so far as you could see it, differ in appearance from the other seeders which surrounded it?

A. It didn't differ any from the other stock, only it had no mark on it.

R. R. C. Q. 81. Were all of these seeders of the same height and size?

A. I couldn't say. We've got large seeders and small seeders.

675 R. R. C. Q. 82. Was this particular seeder smaller or larger than the others by which it was surrounded?

A. Well, I believe that in that space they were all about the same size. It is very seldom we run a large seeder in that space.

R. R. C. Q. 83. They were all, then, as near as you can remember, of the same height?

A. I believe they were.

R. R. C. Q. 84. And as you remember it, this particular seeder had other seeders, both at the sides and ends?

A. It had two on each side and one at the end. One end was standing out so I could see it.

R. R. C. Q. 85. It was not entirely surrounded by them, as you have before testified?

A. It was surrounded on the sides and one end, and one end was exposed.

R. R. C. Q. —. What mark was there on this seeder by which you could distinguish it from the others?

A. There was no mark at all on that seeder, and all the other seeders have the day of the month marked on them.

Re-re-redirect examination:

R. R. R. D. Q. 87. Was the exposed end of that seeder the end towards the presses or the end towards the door?

A. It was towards the press; there was a press right in front of it.

R. R. R. D. Q. 88. How far was the exposed end of that seeder from the press right in front of it?

A. I couldn't say exactly.

R. R. R. D. Q. 89. About how far?

A. I should say about ten feet.

676 Re-re-recross-examination:

R. R. R. C. Q. 90. You did not spend all of your time at the press nearest to this seeder, did you?

A. No, sir.

JOHN H. FITZMAURICE.

Subscribed and sworn to before me this 12th day of September, A. D. 1885.

EDWIN L. THURSTON,
Notary Public.

THOMAS WHALEN, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testifies as follows in answer to interrogatories propounded by counsel for defendant:

Q. 1. What is your name, age, residence, and occupation?

A. 24 years of age; 45th St. and Wentworth Ave., No. 4545; run the presses all night at Fairbank Canning Company.

Q. 2. Were you employed there at that work in June, 1885?

A. Yes, sir.

Q. 3. What time do you go on duty and off duty?

A. Half past five in the evening, and go off when relieved by Mr. Peck or Fitzmaurice in the morning.

Q. 4. Have you been present and heard the testimony of Mr. John H. Fitzmaurice this afternoon?

A. Yes, sir.

Q. 5. Do you remember anything about that particular seeder, not numbered or dated, which was filled and stood in the
677 press-room to seed, and was watched by Mr. Fitzmaurice, in the day-time in June last, as Mr. Fitzmaurice testified?

A. Yes, sir.

Q. 6. State what you had to do with it.

A. Mr. Peck told me at night to watch this seeder particular; to allow no one to disturb it in any way—to put anything in it or take anything out of it—and if they did I was to notify him right away.

Q. 8. Did you do as he directed?

A. Yes, sir.

C. Q. 9. Did you watch it every night from the time when that particular charge was put into it until it was seeded and taken out?

A. Yes, sir.

C. Q. 10. From the time when that seeder was filled until it was seeded and emptied, did any one add anything to its contents or take anything away from them or disturb it in any way while you were on duty there?

A. No, sir.

Cross-examination by Mr. TOWLE:

C. Q. 11. Have you talked with Mr. Peck about the testimony you have given to-day?

A. No, sir.

C. Q. 12. Have you talked with Mr. John H. Fitzmaurice about it?

A. No, sir.

C. Q. 13. Have you been sitting here in this room; within a few feet of Mr. Fitzmaurice, and listening to what he had to say?

Objected to on the ground that the witness has already
678 testified that he was present and heard Mr. Fitzmaurice's testimony, and the distance he sat from him is entirely immaterial.

A. Yes, sir.

C. Q. 14. Who asked you to come here and listen to the testimony of Mr. Fitzmaurice?

A. No one—to particularly listen to the testimony of Fitzmaurice.

C. Q. 15. Who asked you to come here as a witness to-day?

A. I came with Mr. Peck to give my testimony about this seeder.

C. Q. 16. How long have you worked for the Fairbank Canning Company?

A. About 7 months.

C. Q. 17. What are you employed to do?

A. To run the presses.

C. Q. 18. Have you charge at night of the 5 presses under the supervision of Mr. Fitzmaurice during the day?

A. Yes, sir.

C. Q. 19. How many men are employed in the press-room where you work during the night?

A. Seven.

C. Q. 20. How large a room is it—how many feet long and how many wide?

A. I don't know, sir.

C. Q. 21. Is it a very large room?

A. Not so extra large.

C. Q. 22. How many doors has it?

A. I couldn't say, sir.

C. Q. 23. Are these doors locked at night?

A. I don't know, sir; I never paid any attention to any doors only the one I come in.

679 C. Q. 24. How is this room lighted?

A. By gas and lamps.

C. Q. 25. Is it kept very light at night?

A. Yes, sir.

C. Q. 26. How many gas burners are used?

A. I never counted them.

C. Q. 27. About how many?

A. I couldn't say, sir.

C. Q. 28. How many lamps are used in this room?

A. That I couldn't say.

C. Q. 29. Is it a part of your work to look after the 5 presses in this room during the night?

A. Only one press works at a time.

C. Q. 30. Do these presses require much attention?

A. There is generally only one a-working when I go in in the evening. The rest are all finished.

C. Q. 31. How many presses were used during the night between June 13th and June 16th, 1885?

A. Five presses in the room, but not all working at the same time.

C. Q. 32. How do you know that this particular seeder, containing oleomargarine stock, about which you have testified was in the room where you are employed between the 13th and 16th of last June?

A. To the best of my idea, it was on the 13th, 14th, and 15th of June.

C. Q. 33. How do you know it was there at this particular date? Where do you get your idea from?

A. I've got no certain date, but I am pretty sure it was between those three dates.

680 C. Q. 34. Do men work at night in other parts of the building—that is, outside of the press-room, where you are?

A. I don't be in any other part of the building but my own—the press-room.

C. Q. 35. You swear then, do you, that you don't know whether men work at night in other rooms besides the press-room?

A. Only a couple of men upstairs—about 5 men.

C. Q. 36. Do these men from upstairs ever come down in the press-room at night?

A. No, sir; only the foreman, when he has business down there.

C. Q. 37. I understand that the press-room is under your charge at night. Is this so?

A. Mr. Peck looks after the press-room. I go by his instruction.

C. Q. 38. Is Mr. Peck there at night?

A. An hour or two in the evening.

C. Q. 39. When Mr. Peck isn't there who has charge of the room?

A. Mr. Peck hasn't been away from there a night since I've been employed by the Fairbank Canning Co.

C. Q. 40. But you say Mr. Peck isn't there only about an hour or two in the evening. Who has charge of the room after Mr. Peck goes away?

A. I have.

C. Q. 41. You say you follow the instructions from Mr. Peck. Did he say anything to you between the 13th and 16th of last June about keeping the doors locked and keeping persons out of the press-room when he wasn't there?

681 A. He never said anything about any doors. I never saw any outside men there nights, except the foreman upstairs.

C. Q. 42. Do your duties at night keep you in one part of the room all the time?

A. Not exactly one part.

C. Q. 43. Are you walking around from one part of the room to another?

A. Yes, sir.

C. Q. 44. Are you constantly engaged about your work or do you occasionally sit down and take a rest during the night?

A. No, sir; I never sit down.

C. Q. 45. Do you ever leave the room at night?

A. No, sir. Not while that seeder was in my charge.

C. Q. 46. Do you pretend to swear that you didn't go upstairs at all during either of the nights while this seeder was in your room?

A. I never left the room.

C. Q. 47. Not even for a few moments?

A. Had no occasion, sir.

C. Q. 48. Is it a fact that you never leave this room at night at all?

A. Not while the seeder was in my charge.

C. Q. 49. Then you do leave other nights, do you?

Objected to as irrelevant to the examination-in-chief and because it is of no consequence what the witness does on other nights.

A. In case a belt breaks I report to the engineer. I don't leave the press-room, but speak through the door.

C. Q. 50. You swear, do you, that you never leave this room
682 between 5.30 at night, when you take charge, until you are relieved in the morning by Mr. Peck or Mr. Fitzmaurice?

A. I never had any necessity to leave it since I've been on night work.

C. Q. 51. How many seeders were in the press-room at the same time as this particular one about which you have testified?

A. I don't know, sir.

C. Q. 52. About how many?

A. I couldn't give you any idea.

C. Q. 53. Where was the seeder in the room—that is, the one to which Mr. Peck called your attention?

A. To the best of my belief about the center—very near.

C. Q. 54. Were other seeders placed all around it?

A. Yes, sir.

C. Q. 55. Were the seeders which were near this one about this same size?

A. I could not say, sir.

C. Q. 56. What mark was placed upon this particular seeder to which your attention was called?

A. No mark at all.

C. Q. 57. Did you examine it to see whether there was any mark on it?

A. Yes, sir.

C. Q. 58. When did you do this?

A. The night Mr. Peck told me about this seeder.

C. Q. 59. Did he tell you to examine it, or did he tell you there was no mark on it?

A. No, sir. He told me nothing at all about it.

683 C. Q. 60. Is it customary for you to examine the seeders standing in the press-room at night to see how they are marked?

A. Yes, sir.

C. Q. 61. What do you do it for?

A. So I won't get them mixed.

C. Q. 62. What was the temperature in this room during the nights between the 13th and 16th of last June?

A. Between 80° and 85°.

C. Q. 63. Is there a door opening from this press-room into the engine-room?

A. Between the press-room and engine-room—the door I come through.

C. Q. 64. What door or doors open from the engine-room besides the door into the press-room? Is there an outside door opening into the engine-room?

A. One outside door.

C. Q. 65. Do you have to look after the 7 men employed at night in this press-room while Mr. Peck is not there?

A. Yes, sir.

THOMAS WHALEN.

Subscribed and sworn to before me this 12th day of September, 1885.

EDWIN L. THURSTON,
Notary Public.

An adjournment was here taken to Monday, Sept. 14th, 1885, at 10 o'clock a. m.

MONDAY, *Sept.* 24, 1885—10 o'clock a. m.

Met pursuant to adjournment.

Parties present: C. K. Offield, Esq., for complainants, and L. Hill, Esq., for defendant.

684 JOHN H. HARTOG, a witness for defendant, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testifies as follows in answer to interrogatories propounded by Mr. HILL:

Q. 1. What is your name, age, residence, and occupation?

A. My name is John H. Hartog; age, 21; residence, 202 Michigan avenue; occupation, broker and inspector.

Q. 2. What articles do you deal in as a broker and inspector—as an inspector?

A. I deal in and inspect all articles used in the manufacture of artificial butter. I make a specialty of "oleo" oil.

Q. 3. What experience have you had in examining, inspecting, and grading "oleo" oil?

A. I have been with my Holland firm in Rotterdam as their inspector of "oleo" for two years and a half. From there I have been in Paris for a short time to learn the manufacture of it; then I have been with Armour & Co., of this city, for a year and a half, to superintend the making of the oleo oil and select the article before exporting, starting in October of last year for myself as an inspector.

Q. 4. Since you started for yourself, in October last, have you inspected much or little "oleo" oil?

A. Well, I didn't keep track of it up to the 1st of January, but since the first of the year up to date I must have inspected between ten and twelve thousand tierces, both here and in other cities in this country.

Q. 5. Does your certificate of inspection determine anything about the price of the oil?

685 A. Yes; it determines the quality, and consequently the price, too.

Q. 6. What manufacturing firms employ you to inspect their oil?

A. They are spread all over the country. They send me in their

orders and buy on my inspection here. Sometimes firms abroad buy on my inspection here.

Q. 7. Mr. Gilbert A. Peck testified recently in this case that a test was made at the works of the Fairbank Canning Company on June 17th, 1885, which consisted in subjecting a panful of solidified oleomargarine stock to the action of a press in order to extract the oleomargarine oil from it, and that a Mr. John H. Hartog, of this city, was present during the operation. Are you the Mr. John H. Hartog to whom he referred?

A. Yes; 'twas I.

Q. 8. Do you remember the experiment of removing that solidified stock from the pan and slicing and pressing it that day?

A. May I ask you what you mean by solidified—solid?

Q. 9. Yes; solid.

A. Yes; I remember perfectly well.

Q. 10. Will you describe how the solid stock was removed from the pan?

A. The pan was turned upside down on a board and lifted off.

Q. 11. When the pan was lifted off did the stock resting on the board retain the same shape that it had had in the pan?

A. Yes.

Q. 12. What was next done with the stock after the pan was lifted off?

686 A. One of the men sliced it with a cleaver.

Q. 13. What was then done with these slices?

A. They were put into the press cloths and put on the plates of the press.

Q. 14. How hard was that stock when it came out of the pan and was sliced as you have described?

A. I can't find a definition for saying how hard it was.

Q. 15. Did it seem to be solid all through or did any of it seem to be soft in the middle?

A. It was solid all through to the center.

Q. 16. Did you see that stock in the pan weighed before it was sliced up? If so, will you state what it weighed?

A. Yes; I paid particular attention to the weighing and remember that it weighed 91 pounds net.

Q. 17. Did you stay there and watch it during the entire operation of pressing it?

A. Yes; I saw the experiment from beginning to end, but was called away when they started pressing it to answer the telephone, and the amount of oil on the scale had increased by almost one pound when I returned.

Q. 18. What amount of oil was obtained from that panful of stock by that pressing operation which you witnessed that day?

A. 55 pounds of oil.

Q. 19. What was the character and quality of that oil?

A. It was a prime oil.

Q. 20. Did you taste it and smell it, as well as examine it with the eye?

A. Yes; I did, for it is by smelling and tasting only that you can judge of the quality.

687 Q. 21. How did the smell and taste of it compare with that of the best quality of oil prepared for the trade at the Fairbank Canning Company's works?

A. In my estimation it was the very same as Fairbank's number 1 oil.

Q. 22. Was there anything in that press except that panful of stock when the pressing of it was going on—I mean any other stock or oil?

A. Nothing but the 91 pounds of oleo stock.

Q. 23. And did that 55 pounds of oil all come from that stock and was it all the oil that came from that stock?

A. Yes.

Q. 24. Did you notice whether the power of the press appeared to be put on to its full capacity while pressing that stock?

A. Well, all I noticed was that it was pressed hard enough to extract all the oil there was in the stock.

Q. 25. Did you examine the stearine that remained in the press after the oil was pressed out?

A. Yes; and considered it a number 1 article.

Q. 26. In that experiment at the Fairbank Canning Company's works on June 17th were the plates of the press warmed before they were used?

A. Yes; they were put into warm water, and when the press cakes were made they were wiped off and put in the press.

Q. 27. What was the temperature of the water in which the plates were placed to warm them?

A. 100 degrees Fahrenheit.

688 Cross-examination by C. K. OFFIELD:

C. Q. 28. How long have you been an inspector of oleomargarine oil?

A. Almost 5 years from this date.

C. Q. 29. Who is this Holland firm of Rotterdam?

A. The name of the firm is Hartog & Fesel, Rotterdam.

C. Q. 30. They buy their oil of these defendants, do they not?

A. I don't know who the defendants are.

C. Q. 31. Do you know what the word defendants means?

A. Yes, sir.

C. Q. 32. And you knew when you took your oath, if not before, that the Fairbank Canning Company are the defendants in the case you are testifying in, don't you?

A. I don't know I took an oath.

The notary here remembers that owing to confusion in the office he neglected to administer an oath to the witness. The witness makes the following oath to wit: That all the testimony he has given in the above-entitled suit and all the testimony he will give is the truth, the whole truth, and nothing but the truth.

Counsel for complainants here states that the complainants will make no objection to the form of the above oath.

C. Q. 33. You are inspector for the defendant, The Fairbank Canning Company, are you not?

A. No, sir.

C. Q. 34. Don't you inspect their oil?

689 A. Yes; I do, but not their oil exclusively. I am in business for myself.

C. Q. 35. The Holland Hartog is your father, is he not?

A. Yes.

C. Q. 36. And your father's Holland firm buy their oil of these defendants, do they not?

A. Yes; sometimes.

C. Q. 37. What relation is your father to the principal members of this Fairbank Canning Company?

A. He has never seen the principal member, but buys his goods from the company.

C. Q. 38. Yes; but what relation is he to the principal member?

A. If he deals with them, nothing but the usual relation that exists between buyer and seller.

C. Q. 39. Is he the father-in-law or——

A. No relation on earth.

C. Q. 40. Your position in the Fairbank Canning Company, in short, is simply to look after the oil your father buys from them, is it not?

A. I occupy no position whatever in that company; but I am simply established here to look after the interest of my buyers.

C. Q. 41. How long did it take to press that 91 lbs. of stock?

A. From about 10.30 to about 2 o'clock in the afternoon.

C. Q. 42. The first you saw of that stock was when it was dumped out of that pan in a chilled condition, was it?

A. Yes, sir.

C. Q. 43. Have you ever made oleomargarine oil, practically, yourself?

690 A. Yes, sir; for a year and a half exactly.

C. Q. 44. The stock weighed 91 lbs. in the pan, did it?

A. No; after it was dumped.

C. Q. 45. What did they dump it on to weigh it?

A. From the board where they dumped it on—back on the pan.

C. Q. 46. Did they weigh the board and the stock?

A. No; then they weighed the pan and the stock together.

C. Q. 47. What did the pan and the stock together weigh?

A. 95 pounds together. The empty pan, 4 pounds.

C. Q. 48. What did the board weigh?

A. The board was not weighed and didn't go onto the scales.

C. Q. 49. What did the bucket weigh that caught the oleomargarine oil?

A. It was the same tin—four pounds.

C. Q. 50. How long after the pressure was put on this 91 lbs. of stock before the oil began to flow?

A. I cannot say that exactly, because you can't tell when the pressure commences; but very shortly after the pressure was put on, anyway.

C. Q. 51. Were any of the cloths holding any of this 91 lbs. of stock broken or busted by this pressure?

A. No, sir.

C. Q. 52. Did you have the plates in your hand yourself—all of them?

A. I touched some, but not all, so far as I remember.

C. Q. 53. Do you know how long it would take, ordinarily, to press 91 lbs. of oleomargarine stock at defendant's works?

A. No, sir.

691 C. Q. 54. Did you have dinner while this pressing was going on?

A. I am sorry to say no.

Redirect examination by Mr. HILL:

R. D. Q. 55. Do you inspect stearine for buyers?

A. Yes, sir; quite frequently.

R. D. Q. 56. Do you buy oleomargarine oil from Armour & Co. and Swift?

A. Yes; from all the Chicago manufacturers, without exception.

JOHN H. HARTOG.

Subscribed and sworn to before me this 14th day of September, A. D. 1885.

EDWIN L. THURSTON,
Notary Public.

692 STATE OF ILLINOIS, } ss:
County of Cook, }

I, Edwin L. Thurston, a notary public in and for said county of Cook, duly commissioned and qualified, do hereby certify that on the several days named in the depositions hereto annexed I was attended at my office, room 27, No. 53 Dearborn St., Chicago, Illinois, by the counsel and witnesses aforesaid; that the said witnesses, George Fitzmaurice, Gilbert A. Peck, John H. Fitzmaurice, Thomas Whalen, and John H. Hartog, were by me sworn to tell the truth, the whole truth, and nothing but the truth, and that the depositions were severally subscribed and sworn to by said witnesses, as above set forth, in my presence; that the said depositions were reduced to writing by myself in the presence of the respective witnesses; that the deposition of each was read to him by me, and said depositions were taken at the time and place in the annexed notice set forth, and were continued from day to day, as above specified; that I am not counsel, attorney, or relative of either party or otherwise interested in the event of this suit.

In testimony whereof I have hereunto set my hand and affixed my notarial seal, at Chicago, Illinois, this September 15th, 1885.

EDWIN L. THURSTON,
[SEAL.] *Notary Public.*

693 "DEFENDANT'S EXHIBIT FILE WRAPPER AND CONTENTS AND SPECIFICATION OF ORIGINAL MEGE PATENT."

United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY.
} In Equity.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the files of this office of the file wrapper and contents in the matter of the letters patent granted Hippolyte Mege December 30, 1873, number 146,012, for improvement in treating animal fats.

In testimony whereof I, E. M. Marble, Commissioner of Patents, have caused the seal of the Patent Office to be affixed this 12th day of January, in the year of our Lord one thousand eight hundred and eighty-three, and of the Independence of the United States the one hundred and seventh.

[SEAL.]

E. M. MARBLE,
Commissioner.

NEW YORK, *Oct.* 31, 1873.

Commissioner of Patents, Washington, D. C.:

DEAR SIR: I send herewith—

1. A designation of myself as attorney for Hippolyte Mege, of Paris, to procure a patent on.
2. The specification; and,
3. Petition annexed.
4. An appointment of R. Ogden Doremus as attorney to dispose of the patent if issued, which latter is for record.
5. My check for $15, which is, I believe, the initial fee.

I am informed that a French patent for this process was issued to Mr. Mege Oct. 2, 1869.

Very respectfully yours, C. A. SEWARD.

694 *Power of Attorney.*

I do hereby constitute and appoint C. A. Seward, of New York, or his duly authorized substitute, my lawful attorney and agent to alter or modify the specification and drawings in my application for letters patent for improved means for transforming animal fats into butter, as he may deem expedient, to withdraw the application should it be deemed advisable, and to receive and transmit the patent when granted.

Signed at Paris this seventh day of October, 1873.

H. MEGE.

Oath.

CITY OF PARIS, IN THE FRENCH REPUBLIC, *ss:*

On this seventh day of October, 1873, before the subscriber, F. Olcott, U. S. deputy consul general in and for the said city, personally appeared the within-named Hippolyte Mege, of Paris, chemist manufacturer, and made solemn oath that he does verily believe himself to be the original and first inventor of the within-described improved means for transforming animal fats into butter, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the French Republic.

Witness my hand and official seal the day and year as above written.

F. OLCOTT,
U. S. Deputy Consul General.

[L. S.]

18458.
$2.00.

Specification of Improved Means for Transforming Animal Fats Into Butter by Hippolyte Mege, of Paris, Chemist Manufacturer.

My invention, which is the result of physiological investigations, consists of ^artificially [industrially] producing the natural work which is performed ^by [into] the cow when it re-absorbs its fat in order to transform the same into butter. The improved means I employ for this purpose are as follows:

1st. Neutralization of the ferments. In order to prevent the greasy substance which is settled in [to] the tissue of the animals ^from [of] taking the disagreeable taste of the fat, it is necessary that the ferments which produce this taste shall be completely neutralized, for this effect, as soon as possible after the dea^th [d] of the animal, I plunge the raw fats called "graisses en branches" into water containing 15 per cent. of sea salt and one per cent. of sulphite of soda. I begin thus the transformation an hour at least after the immersion and twelve hours at most afterwards.

2ly. Crushing—A complete crushing is necessary in order to obtain [a] rapid work without alteration; for this purpose, when the
695 substance is coarsely crushed, I let it fall from the cylinders under millstones which completely bruise all the cells.

3ly. Concentrated digestion.—The crushed fat falls into a v[ai]^e ssel, which is made of well-tinned iron or enamelled iron or baked clay. This v[ai]^e ssel must be plunged in a water bath, of which the temperature is raised at will. When the fat ^has descended in the v[ai]^e ssel I melt it by means of an artificial digestion, so that the heat ^does not ex-

ceed[ing] 103 degrees Fahrenheit, and thus no taste of fat is produced. For this purpose I throw into the washtub containing the artificial gastric juice about two litres per hundred kilograms of greasy substance. (This gastric juice is made with the half of a stomach of a pig or a sheep [mutton] well washed and three litres of water containing thirty grams of biphosphate of lime. After a maceration during three hours I pass the substance through a fine sieve and I obtain the two litres which are necessary for an hundred kilograms.) I slowly raise the temperature to [at] about 103 degrees Fahrenheit, so that [as] the matter shall [does] completely separate. This greasy matter must not have any taste of fat; it must, on the contrary, have the taste of molten butter. [Once] When the liquid does not [more] present any more lumps [grumes] I throw into the said liquid one kilogram of sea salt reduced to powder per hundred kilograms of greasy matter. I stir [move] during a quarter of an hour, and let it set until obtaining perfect limpidness. This method of extraction has a considerable advantage over [upon] that which has been previously essayed [given]. The separation is well made and the organized tissues which do deposit are not altered.

4ly. Crystallization in a mass.—In order to separate the oleomargarine of the stearine separated crystallizers or crystallizations at unequal temperatures have been already employed. I have contrived for this purpose the following method, which produces a very perfect [correct] separation and is as follows: I send the molten fat in a ve [vai]ssel which must be sufficient for containing it. This ve [vai]ssel is placed in[to] a wash-tub of strong wood, which serves as a water bath. [because] In this wash-tub I put water at the fixed temperature of 86 degrees Fahrenheit for the soft fats proceeding from the slaughter-houses and 98 degrees for the harder fats such as mutton fat proceeding from the abattoir of the muttons. Afterwards the wash-tubs are covered, and after a certain time [which is], more or less long, according to the fats, the stearine is deposed in the form of teats at the middle of the oleomargaric liquid.

5ly. Separation by [the] centrifugal force.—In order to avoid the numerous inconveniences of the employment of the presses which have been hitherto used employed, I cause the mixture of stearine and oleomargarine to flow into a centrifugal machine called hydro-extractor; the greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed I put the machine in[to] motion movement, and the crystals of stearine are entirely exhausted
696 without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine

soft enough for rendering necessary [a] ^the^ stroke of ^a^ press as a last operation, but in this case this operation has little importance, because it is applied only to a fraction of the product. In all [the] cases the oleomargarine ^is^ separated ^from^ [of] the stearine when it is cold[ed] and passed to the cylinder constitutes (especially if its yellow color has been raised) a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of margarine; but if it is desired to transform it into more perfect butter I employ the following means:

6ly. In the methods hitherto employed the margarine is transformed into cream and this latter into butter. This complicated operation has many inconveniencies. I obtain the same result by the following manner: I take ten litres of natural and fresh cream of milk. I add ten grams of bicarbonate of soda and two hundred grams of ^the^ udders of ^a^ cow, which must be fresh and well hacked in order to give all the mammary pepsine. (The fresh udder may be replaced by udder collected in slices in[to] sea salt.) After a maceration of an hour I pass the whole through a very fine sieve. I add the necessary quantity of yellow color which is employed for the ordinary butter, and I put these ten litres into ^an^ hundred kilograms of liquid margarine at 70 degrees. I ^stir or mix^ [move] until the combination is complete—that is to say, until the pepsine has effectuated its action. At this moment the liquid becomes thick; it takes the taste of cream, and ^after it has been more thoroughly^ [once it can more be] agitated I let the same become completely cold. When the butter is cold and solid I coarsely scrape it in order to pass it between two large cylinders (well exact), which give it the homogeneousness and the consistence which are the qualities of the natural butter.

7ly. When it is desired to produce butter intended to be preserved, which must contain no animal matter, I plunge the udders into pure water instead of cream in order to macerate the same. Afterwards the water which proceeds from this operation is mixed with the margarine ^at^ [so] about 86° ^of temperature— that is to say, to a degree which permits [to] the pepsine to effectuate its action without production of cream. After an hour I let the liquid set, and the margarine, which is decanted, is mixed, ^after it has been reduced in temperature to about^ once it descended at 71 degrees, with an emulsion of butter made with five litres of water, five kilogrammes of butter, one kilogram of sea salt or more, according to the uses, and ten kilograms of bicarbonate of soda. When I add this emulsion with the margarine, which has already been submitted to the pepsic action, I obtain a rapid combination and all the molecules take the qualities of the ordinary butter. It is a delicate operation, which must be very exactly made.

8ly. For the long conservations I only treat the margarine by the mammary pepsine, as before described. I decant it in order to avoid any trace of water or animal matter. If it is desired to add

ordinary butter I do that at the temperature of 71 degrees by well diluting it.

9ly. The stearine which has been separated from the margarine forms a hard fat, which can be bleached by the known processes in order to produce wax candles of lower quality; but it is preferable to saponify it by any convenient process and crystallize the greasy acids (which are charged ^with^ from 70 to 80 per cent. of stearic acid instead of 50) in a chamber heated ^to^ [at] 96 degrees, so as not ^to^ let them become hard by the ^cooling^ [colding]. In this state they can be pressed ^under^ [at] heat in order to produce stearic acid much superior to that of the trade, ^both^ [either] by its beauty or by its point of melting.

697

I claim:

Erase and

1st. The before-described method of neutralization of the ferments of the greasy matters.

2ly. The double crushing by means of cylinder and millstone.

insert per

3ly. The artificial concentrated digestion.

4ly. The crystallization in a mass and at a fixed temperature.

am'd't "A,"

5ly. The separation of the stearine by the centrifugal force.

6ly. The transformation into butter without churning.

Dec. 23d, '73.

7ly. The means of pressing the greasy acids proceeding from the stearine.

H. MEGE.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

H. MEGE.

Witnesses:
CHAS. AVERY DOREMUS.
THOS. C. DOREMUS, JR.

Petition.

To the Commissioner of Patents:

The petition of Hippolyte Mege, of Boulevard No. 70 (torn out) of Paris, respectfully represents—

That your petitioner has invented a new and useful improved means for transforming animal fats into butter, which he does verily believe has not been known or used prior to the invention thereof by your petitioner. I therefore pray that letters patent of the United States may be granted to me therefor, vesting in me and my legal representatives the exclusive *representatives the exclusive* right to the same, upon the terms and conditions expressed in the act of Congress in that case made and provided, I having paid fifteen dollars

into the Treasury and complied with the other provisions of the said act.

H. MEGE.

NEW YORK, *December* 12*th*, 1873.

The Commissioner of Patents, Washington.

DEAR SIR: I enclose herewith the affidavit of Hippolyte Mege, as required by rule 90, which I hope will be sufficient to authorize the examiner to take up the application and to proceed with the same in its due course.

Yours very truly, C. A. SEWARD.

698 Before the Commissioner of Patents.

In the Matter of the Application of HIPPOLYTE MEGE for Letters Patent of the United States for an Improvement in Transforming Animal Fats into Butter.

REPUBLIC OF FRANCE, } ss:
City of Paris, }

I, Hippolyte Mege, being duly sworn, do depose and say that I am a citizen of France; that I am the inventor of the improvement in transforming animal fats into butter above referred to; that French letters patent were duly issued to me therefor on the fifteenth day of [October] July, 1869; that I have caused the above application to be made for the issuance of letters patent of the United States for the said improvement, and that, according to the best of my knowledge and belief, the said invention and improvement has not been in public use in the United States for more than two years prior to the filing of my said application in the Patent Office of the United States for letters patent of the United States for the said improvement. I make this statement on oath, conscientiously believing the same to be true, and by virtue of the provisions of section 25 of the act of Congress of July 8th, 1870, entitled "An act to revise, consolidate, and amend the statutes relating to patents and copyrights," and of rule 90 of the said Patent Office.

H. MEGE.

Sworn to before me this the 28th day of November, 1873.

[L. S.] JOHN MEREDITH READ, JR.,
U. S. Consul General.

Fee, $2.00.
21242.

NEW YORK, *Dec.*, 1873.

Hon. Commissioner of Patents—

Will please recognize A. B. Stoughton as associate counsel with myself in the matter of the application of H. Mege for letters patent for process of transforming animal fats into butter.

Resp't'y, C. A. SEWARD,
Att'y for H Mege.

WASHINGTON, *Dec.* 23*d*, 1873.

Hon. M. D. Leggett, Comm. of Patents.

SIR: In the matter of the application of H. Mege for a process of treating animal fats to produce oleomargarine, I have to request that the subjoined amendments may be made to the specification.

Resp't'y, A. B. STOUGHTON,
Associate Att'y.

Amend H. Mege specification as follows: Erase from the 28th line of page 5 to the 5th line of page 6, inclusive, and substitute therefor as follows:

"1. What I claim is the improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or without [its] the addition of substances to change the flavor, consistency, or color, as set forth."

699

"2. The process, herein described, of treating animal fats in the production of oleomargarine."

A. B. STOUGHTON,
Associate Att'y.

23 Dec., '73.

Memorandum of Fee Paid at
U. S. Patent Office.
$20. H
Inventor
H. Mege
Patent to be issued to
Applicant
Invention
Treating Animal Fats
Date of Payment
26 Decr 73.
Fee
$20. final fee.
Solicitor
Patent to C. A. Seward
New York
A. B. Stoughton

U. S. PATENT OFFICE.
Application of
H. Mege.
Filed Dec. 13, 1873.

Contents of this File.

Application.
Amendment Dec 23d 1873.

1873. 19887
Hedrick W

No. 146,012.

Hippolyte Mege.
Of Paris
County of
State of France

700

Means for transforming
Animal Fats into Butter

Reissued May 12, 1874
No. 5868.

Rec'd.	Nov. 1, 1873.
Petition	" " "
Affidavit	Dec. 13, "
Specification	Nov. 1, "
Drawing	
Model	
Cert. dep.	

1 Cash $15. Nov. 1, 1873.
Add'l Fee Cert.
1 " " Cash $20. Dec. 26, 1873
Examined Dec. 23, 73, B. S. Hedrick
2 Issue Dec. 24, 73, Knight
3 Patented Dec. 30, 1873. J
Recorded vol. page
Circular Dec. 24, 1873.
Letter to Atty.
Nov. 5, 73. J. D. P.

C. A. Seward
29 Nassau st.
N. Y. City.

1873

1 Application
2 Amendment
3 Affidavit fixing date
of applicants French
patent July 15, 1869.
Ex'd J. A. W.
M. McK.

50924

Improvement in Treating Animal
fats

701 UNITED STATES PATENT OFFICE.

HIPPOLYTE MEGE, of Paris, France.

Improvement in Treating Animal Fats.

Specification forming part of Letters Patent No. 146,012, dated December 30, 1873.

To all whom it may concern:

Be it known that I, Hippolyte Mege, of Paris, France, chemist manufacturer, have invented an improved means for transforming animal fats into butter, of which the following is a specification:

My invention, which is the result of physiological investigations, consists of artificially producing the natural work which is performed by the cow when it re-absorbs its fat in order to transform the same into butter. The improved means I employ for this purpose are as follows:

1. Neutralization of the ferments.—In order to prevent the greasy substance which is settled in the tissue of the animals from taking the disagreeable taste of the fat it is necessary that the ferments which produce this taste shall be completely neutralized. For this effect, as soon as possible after the death of the animal, I plunge the raw fats called "graisses en branches" into water containing 15 per cent. of sea salt and one per cent. of sulphite of soda. I begin thus the transformation an hour at least after the immersion and twelve hours at most.

2. Crushing.—A complete crushing is necessary in order to obtain rapid work without alteration. For this purpose, when the substance is coarsely crushed, I let it fall from the cylinders under millstones, which completely bruise all the cells.

3. Concentrated digestion.—The crushed fat falls into a vessel which is made of well-tinned iron or enamelled iron or baked clay. This vessel must be plunged in a water bath, of which the temperature is raised at will. When the fat has descended in the vessel I melt it by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced. For this purpose I throw into the washtub containing the artificial gastric juice about two liters per hundred kilograms of greasy substance. (This gastric juice is made with the half of a stomach of a pig or sheep, well washed, and three liters of water, containing thirty grams of biphosphate of lime. After a maceration during three hours I pass the substance through a fine sieve, and I obtain the two liters which are necessary for a hundred kilograms.) I slowly raise the temperature to about 103° Fahrenheit, so that the matter shall completely separate. This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter. When the liquid does not present any more lumps I throw into the said liquid one kilogram of sea salt, reduced to powder, per hundred kilograms of greasy matter. I stir during a quarter of an hour and

let it set until obtaining perfect limpidness. This method of
702 extraction has a considerable advantage over that which has been previously essayed. The separation is well made and the organized tissues which do deposit are not altered.

4. Crystallization in a mass.—In order to separate the oleomargarine of the stearine separated crystallizers or crystallizations on unequal temperatures have been already employed. I have contrived for this purpose the following method, which produces a very perfect separation and is as follows: I rend the molten fat in a vessel which must be sufficient for containing it. This vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub I put water at the fixed temperature of 86° Fahrenheit for the soft fats proceeding from the slaughter-houses and 98° for the harder fats, such as mutton fat. Afterwards the washtubs are covered; and, after a certain time, more or less long, according to the fats, the stearine is deposed, in the form of teats, at the middle of the oleomargaric liquid.

5. Separation by centrifugal force.—In order to avoid the numerours inconveniences of the employment of the presses which have been hitherto used I cause the mixture of stearine and oleomargarine to flow into a centrifugal machine called "hydro-extractor." The greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed I put the machine in motion, and the crystals of stearine are entirely exhausted without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine soft enough for rendering necessary the stroke of a press as a last operation, but in this case this operation has little importance, because it is applied only to a fraction of the product. In all cases the oleomargarine is separated from the stearine when it is cold and passed to the cylinder, constituting, especially if its yellow color has been raised, a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of margarine; but if it is desired to transform it into more perfect butter I employ the following means:

6. In the methods hitherto employed the margarine is transformed into cream and this latter into butter. This complicated operation has many inconveniences. I obtain the same result by the following manner: I take ten liters of natural and fresh cream of milk. I add ten grams of bicarbonate of soda and two hundred grams of the udders of a cow, which must be fresh and well hacked in order to give all the mammary pepsin. (The fresh udder may be replaced by udder collected in slices in sea salt.) After a maceration of an hour I pass the whole through a very fine sieve. I add the necessary quantity of yellow color which is employed for the ordinary butter, and I put these ten liters into a hundred kilograms of liquid margarine at 70°. I stir or mix until the combination is complete—that is to say, until the pepsin has effectuated its action. At this moment the liquid becomes thick; it takes the taste of cream; and, after it has been more thoroughly agitated, I let the same become completely cold. When the butter is cold and solid I coarsely scrape it, in order to pass it between two large cylinders, which give

it the homogeneousness and the consistence which are the qualities of the natural butter.

7. When it is desired to produce butter intended to be preserved, which must contain no animal matter, I plunge the udders into pure water instead of cream, in order to macerate the same. Afterwards the water which proceeds from this operation is mixed with the margarine at about 86° of temperature—that is to say, to a degree which permits the pepsin to effectuate its action without production of cream. After an hour I let the liquid set, and the margarine which is decanted is mixed, after it has been reduced in tem-
703 perature to about 71°, with an emulsion of butter made with five liters of water, five kilograms of butter, one kilogram of sea salt or more, according to the uses, and ten kilograms of bicarbonate of soda. When I add this emulsion with the margarine which has already been submitted to the peptic action I obtain a rapid combination, and all the molecules take the qualities of the ordinary butter. It is a delicate operation, which must be very exactly made.

8. For the long conservations I only treat the margarine by the mammary pepsin, as before described. I decant it in order to avoid any trace of water or animal matter. If it is desired to add ordinary butter I do that at the temperature of 71° by well diluting it.

9. The stearine which has been separated from the margarine forms a hard fat, which can be bleached by the known processes in order to produce wax candles of lower quality; but it is preferable to saponify it by any convenient process and crystallize the greasy acids (which are charged with from seventy to eighty per cent. of stearic acid instead of fifty) in a chamber heated to 96° so as not to let them become hard by the cooling. In this state they can be pressed under heat in order to produce stearic acid much superior to that of the trade, both by its beauty and by its point of melting.

What I claim is—

1. The improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named with or without the addition of substances to change the flavor, consistency, or color, as set forth.

2. The process herein described of treating animal fats in the production of oleomargarine.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

H. MEGE.

Witnesses:
CHAS. AVERY DOREMUS.
THOS. C. DOREMUS, JR.

704 UNITED STATES PATENT OFFICE.

HIPPOLYTE MEGE, of Paris, France, assignor by mesne assignments to the United States Dairy Company of New York City.

Improvement in Treating Animal Fats.

Specification forming part of Letters Patent No. 146,012, dated December 30, 1873; Reissue No. 5868, dated May 12, 1874; application filed May 5, 1874.

To all whom it may concern:

Be it known that I, Hippolyte Mege, of Paris, France, have discovered that a substance substantially identical with true butter may be abstracted from the fats of kine or other animals, and have invented processes by which this product may be produced with greater or less perfection, as it may be desired.

The butter which is obtained from milk is produced by the cow by elaborating her own fat through her cellular and mammary tissues at the low temperature of the body. The animal fat from which the butter cells in milk are produced is composed chiefly of oleine, margarine, stearine, and small quantities of other substances.

The natural process performed by the cow consists mainly, first, in separating the oleomargarine from the stearine without developing disagreeable odors or flavors in the oleomargarine, and, secondly, in producing a slight change in the oleomargarine by which it assumes the character of butter.

The object of my invention is to produce these same effects by artificial means, and I accomplish it by the methods hereinafter described.

When fat is melted at a high temperature, such as is employed in rendering tallow, it has a disagreeable odor very difficult to remove. It is therefore necessary to avoid any process which employs high heat. A temperature of about 103° Fahrenheit, or slightly upward, is practically about sufficient for melting the fat in the treatment hereinafter described.

It is also true that oleomargarine melts at a lower temperature than stearine. It is therefore desirable to use a temperature below the melting point of stearine, when the process of separation is being performed by pressure, so as to leave the stearine in a solid form. I find the temperature of about 80° Fahrenheit to be very proper for this purpose.

The use of low temperature, for the reasons referred to, is controlling in the process I have invented for separating the oleomargarine from the stearine, and therefore producing a virgin fat, free from the taste or odor of natural fat, and free from that which is produced by melting it at a high temperature, and out of which butter may be easily made.

The first step preparatory to the process of separation is to crush, grind, or disintegrate the fat by any suitable machinery, such as

rollers or millstones, and to wash it by a stream of pure water,
705 which may be poured on it while the act of disintegrating is being performed, until it is as free as possible of everything soluble or separable by water. The fat, being thus thoroughly cleansed and disintegrated, may be subjected to artificial digestion.

The gastric juice is made with the half of the stomach of a pig, sheep, or calf, and three litres of water, containing thirty grams of bisulphate of lime. After a maceration of three hours the infusion is passed through a fine sieve and two litres of gastric juice result, which are sufficient for a hundred kilograms of fat with which it is to be mixed. The temperature of this mixture is to be slowly raised to about 103° Fahrenheit, so that the separation shall be complete. The temperature may run higher and an increase of heat will produce the result more rapidly, but care must be taken not to heat the material so as to induce the change which produces disagreeable odors, and my observation is that 125° Fahrenheit is about as high as the heat can be raised safely. The lower temperature produces the most satisfactory results; or the fat may be melted in water of about the same temperature as above described, without the admixture of any other substance, until it is all limpid on the surface and the membranous matter in it has been deposited on the bottom of the vessel. The water is then drawn off or the fat is removed from its surface, as most convenient, and allowed to cool. This preliminary treatment is for the purpose of removing membrane and obtaining the fat free from foreign substances as nearly as possible, whereby the separation will more surely result in pure oleomargarine than if these precautions are not taken.

In this condition the process of separating the oleomargarine from the stearine is to be performed. This is done either by packing the purified fat in sacks of woolen or cotton cloth and subjecting them to pressure in a press, or by the use of a centrifugal machine, such as is used for drying sugar. The effect produced is that the oleomargarine practically separates from the stearine and flows out, leaving the stearine in the sacks or in the centrifugal machine as one or the other means are used. The fat must not be allowed to be chilled in this process below the point at which the oleomargarine will flow readily, or the process will cease to yield the product.

I find 80° Fahrenheit a good temperature. About sixty per cent. of oleomargarine is thus obtained, more or less, according to the fats used.

The oleomargarine thus produced is free from any disagreeable taste or odor and is suitable for various culinary uses, and also for replacing olive oil in the manufacture of soaps, and as a superior lubricator, &c. It is composed, like butter, of oleine, margarine, and a little odoriferous oil, and has not undergone any modification either by excessive heat or by chemical agents; and this is the substance which, passing through the udders of the cow, where it is subjected to the action of the mammary pepsin, is converted into butter. If this neutral fat is to be immediately used for any of the purposes above indicated to which it is applicable, nothing more need be done with it; but it may be somewhat modified in quality

by treating it in a closed vessel, which is provided with a revolving fan or other beater, operated from without by a shaft passing through an air-tight opening. The vessel may be immersed in water at suitable temperatures, the fat being agitated by the beater till it becomes quite thick and uniform. When kept cold it will be solidified and quite brittle. In either case it is desirable, in order to give consistency and tenacity to the oleomargarine, to work it between rollers or otherwise, as is customary with butter. It is useful to prepare the raw fat for the processes above described by immersing it in a solution of fifteen per cent. of common salt and one per cent. of sulphite of soda, the effect of which will be to prevent fermentation while the process is going on; and after the melting of the fat and its purification as above described and before it is subjected to the operation of the press or centrifugal
706 machine I have found it useful to permit the fat to stand for some hours in vessels into which it has been poured when liquid, and slowly to cool, whereby a partial separation of the stearine occurs in the manner of crystallization in the mass, and the work of the press or centrifugal machine is facilitated. When it is desired to convert the oleomargarine as it is separated from the stearine into butter, if the butter is to be immediately used, that transformation is effected by adding to it a small quantity of curds of milk (or their equivalent) or pure milk or cream, and then working it as cream is worked until the butter forms in the usual way. Common salt, one per cent. of bicarbonate of soda, and coloring matter may be added with advantage. If the butter is to be preserved it will be better to mix the oleomargarine at animal heat with its weight of water, in which has been mixed a fiftieth part of mammary tissue (which is the udder of the cow minced fine), a hundredth part of bicarbonate of soda, a fiftieth part of curds of milk, and some coloring matter, and to agitate the mixture for three hours, maintaining animal heat. When this compound settles and cools, the butter will be good and capable of being preserved. The pepsin in the mammary tissues contains the principle which operates usefully in making the transformation, and it may be obtained by macerating the mammary tissue in water and using the water at about 86° Fahrenheit in making the mixture. If the butter is needed for long preservation I add only the mammary pepsin to the oleomargarine, which is prepared as above described, omitting the other ingredients. It is to be remarked that all the metal vessels used should be thoroughly tinned and the plates employed to separate the sacs in the press should be doubly coated with tin in order to prevent any contact with iron or copper.

What I claim as my invention and desire to secure by letters patent is—

1. The process by which oleomargarine, pure and free from disagreeable odor or taste, is extracted from animal fats or suets by pressure at a low temperature, substantially as described.

2. The process by which butter can be obtained from oleomargarine by the aid of pepsin and curds of milk, or their equivalents, substantially as described.

3. The new butter-like product or manufacture, substantially as described.

4. The combination of artificial gastric juice, substantially such as described, with animal fats for the purpose of facilitating the process of separating the oleomargarine from the stearine, as described.

5. In the process of converting oleomargarine into butter, the combination of milk or cream, or the curds of milk, with the oleomargarine, substantially as described.

6. In the same process, the combination of the mammary tissue of the cow, or mammary pepsin, with the oleomargarine, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HIPPOLYTE MEGE.

Witnesses:
ROB'T M. HOOPER.
T. AUGINZ.

707 UNITED STATES PATENT OFFICE.

HIPPOLYTE MEGE, of Paris, France, assignor by mesne assignments to the United States Dairy Company.

Improvement in Treating Animal Fats.

Specification forming part of Letters Patent No. 146,012, dated December 30, 1873; Reissue No. 5868, dated May 12, 1874; Reissue No. 8424, dated September 24, 1878; application filed August 15, 1878.

To all whom it may concern:

Be it known that I, Hippolyte Mege, of Paris, France, have discovered a new and improved process of transforming animal fats into butter, of which the following is a full, clear, and exact description.

The butter which is obtained from milk is produced by the cow elaborating her own fat through her cellular mammary tissues at the low rate of the temperature of the body.

The animal fat from which the butter cells in milk are produced is composed chiefly of oleine, margarine, and stearine, and small quantities of other substances.

The natural process performed by the cow consists mainly, first, in separating the oleomargarine from the stearine without developing disagreeable odors or flavors in the oleomargarine; and, secondly, in producing a slight change in the oleomargarine, by which it assumes the character of butter.

My invention, hereinafter described, is based upon a discovery made by me that when the fat is rendered at a low temperature, considerably below that heretofore employed in the ordinary rendering of fat, it has the taste of molten butter and does not acquire that peculiarly disagreeable flavor heretofore supposed to be neces-

sarily attached to melted fat or tallow and which is designated as a "tallowy flavor."

I have succeeded in obtaining excellent results by rendering the crude fat at a temperature of 103° Fahrenheit, which is below the temperature at which the tallowy flavor is created. The temperature may be raised above this point in order to facilitate the operation, provided care be taken to avoid attaining the temperature at which the tallowy flavor is created.

The precise limit to which it is safe to increase the rendering temperature can be ascertained by trial under various circumstances with the different kinds of fat. The temperature must, however, be far below that heretofore ordinarily used in rendering fats when no such object as I propose—to wit, the making of a butter-like product—was had in view. I do not think it would be safe to vary many degrees above that specifically indicated.

708 I have also discovered that in order to neutralize any fermentation of the fat before or during its treatment the raw fat should, as soon as possible after the death of the animal, be plunged in a solution of fifteen (15) per cent. of common salt and one per cent. of sulphite of soda, the effect of which would be to prevent such fermentation.

In carrying out my process I first crush, grind, or disintegrate the fat by any suitable machinery, such as rollers or millstones, in order to break up the cellular tissues in which the fat is contained in the animal, and thus cause it to be more easily melted or rendered by the application of low temperatures. This fat thus disintegrated is to be slowly raised to a temperature of 103° Fahrenheit in a vessel in which the temperature can be raised at will until the rendering shall be complete. The temperature, as before stated, must be so regulated that the rendered fat will have the taste of molten butter, and care should be taken not to heat it so as to induce the change which produces the usual disagreeable taste of melted fat or tallow instead of the taste of molten butter, which temperature is considerably below that heretofore ordinarily used in rendering fat, and will be found to vary not many degrees above the point already stated.

I also add to the fat while being rendered, for the purpose of aiding in this process, two liters of gastric juice to a hundred (100) kilograms of fat. This gastric juice is made by macerating, for three hours, half of the stomach of a pig or sheep, well washed, and three liters of water containing thirty grams of biphosphate of lime. After maceration this macerated substance is passed through a sieve and then added to the fat under treatment in the proportion of two liters to one hundred kilograms.

The separation of the organized tissues from the fat is aided by the introduction of salt during the rendering, and as soon as there are no lumps of fat visible in the kettle I add about one per cent. of common salt. I stir it for some time. The rendered fat is then allowed to stand until it attains perfect limpidity, when it can be drawn off. By this means the separation is well made and the organized tissues which do deposit are not altered. I then allow the melted fat to stand in a vessel, maintained at a temperature of about

86° to 98°, until the stearine is crystallized. The mixture of stearine and oleomargarine may then be put in a centrifugal machine, and by the operation of this machine the oleomargarine will pass through the cloth and the stearine remain within, or the mixture may be subjected to pressure in a press. The effect produced in either case is that the oleomargarine practically separates from the stearine and flows out. The oleomargarine thus separated from the stearine, when cooled, constitutes a fatty matter of very good taste, which may replace the butter used in the kitchen. If it is desired, however, to transform it into more perfect butter I employ the following means: I mix the oleomargarine, as it comes from the press or centrifugal machine, with milk and cream equal to ten per cent. of the weight of the oleomargarine, the temperature of the milk and cream being about seventy-one (71) degrees, and thoroughly agitate them together. I then let the mixture become completely cold and solid and then cause it to be worked between rollers, which give it the homogeneousness and the consistency which are the qualities of the natural butter.

The above process of agitating the oleomargarine with milk is intended to be adopted when the butter is to be immediately used. If the butter is intended to be preserved it will be better to mix the oleomargarine at animal heat with ten per cent. of its weight of water, instead of milk or cream, and then agitate the two together as above described.

I have also found it expedient to mix with the cream or
709 milk, in the first case, above described, before agitating, or with the water in the other case above described, before agitating, a fiftieth part of mammary tissue, which is the udder of the cow, minced fine, a one-hundredth part of bicarbonate of soda, and some coloring matter.

It may be desirable to add ordinary butter, and this I do by mixing the oleomargarine and the ordinary butter together at a temperature of about 70° Fahrenheit.

What I claim as my invention and desire to secure by letters patent is—

1. The rendering of animal fat at a low temperature, substantially as above set forth, for the production of a fatty matter devoid of disagreeable taste.

2. As a new product of manufacture, fat rendering at low temperature, substantially as above described, devoid of disagreeable taste.

3. The combined process of rendering animal fat at a low temperature and then separating the oleomargarine for the purpose of producing a material adapted to be used as ordinary butter for culinary purposes, or to be further treated for making more perfect butter, substantially as above described.

4. As a new product of manufacture, oleomargarine obtained from fat rendered at a low temperature and separated from the stearine, substantially as above described.

5. The agitating of oleomargarine with water or milk for the pur-

pose of making a more perfect imitation of butter, substantially as above described.

6. The butter-like product produced by the agitation of oleomargarine with water or milk, substantially as above described.

7. The treatment with artificial gastric juice for facilitating the process of rendering the fat at a low temperature, substantially as above described.

8. The treatment of the oleomargarine with the mammary tissue of the cow, or mammary pepsin, substantially as above described.

9. The addition of ordinary butter to oleomargarine, substantially as above described.

H. MEGE.

Witnesses:
ROB'T M. HOOPER.
M. D. DESHLER.

710 UNITED STATES PATENT OFFICE.

COMMERCIAL MANUFACTURING COMPANY, Consolidated, of New York, N. Y., assignee, by mesne assignments, of Hippolyte Mege, deceased.

Treating Animal Fats.

Specification forming part of Reissued Letters Patent No. 10137, dated June 13, 1882; original No. 146,012, dated December 30, 1873; Reissue No. 5868, dated May 12, 1874; Reissue No. 8424, dated September 24, 1878; application for reissue filed May 20, 1882.

To all whom it may concern:

Be it known that I, Hippolyte Mege, of Paris, France, now deceased, chemist manufacturer, did invent an improved means for transforming animal-fat into butter, of which the following is a specification:

This invention, which is the result of physiological investigations, consists of artificially producing the natural work which is performed by the cow when it re-absorbs its fat in order to transform the same into butter. The improved means he employed for this purpose are as follows:

I. Neutralization of the ferments.—In order to prevent the greasy substance which is settled in the tissue of the animals from taking the disagreeable taste of the fat it is necessary that the ferments which produce the taste shall be completely neutralized. For this effect, as soon as possible after the death of the animal, he plunged the raw fats, called "graisses en branches," into water containing fifteen per cent. of sea salt and one per cent. of sulphite of soda. He began thus the transformation an hour at least after the immersion and twelve hours at most afterward.

II. Crushing.—A complete crushing is necessary in order to obtain rapid work without alteration. For this purpose when the

substance is coarsely crushed he let it fall from the cylinders under millstones, which completely bruise all the cells.

III. Concentrated digestion.—The crushed fat falls into a vessel which is made of well-tinned iron or enameled iron or baked clay. This vessel must be plunged in a water bath, of which the temperature is raised at will. When the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced. For this purpose he threw into the washtub containing the artificial gastric juice about two liters per hundred kilograms of greasy substance. This gastric juice is made with the half of a stomach of a pig or sheep, well washed, and three liters of water containing thirty grams of biphosphate of lime. After the maceration during three hours he passed the substance through a fine sieve and obtained the two liters which are necessary for a hundred kilograms. He slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate. This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter. When the liquid does not present any more lumps he threw into the said liquid one kilogram of sea salt (reduced to powder) per hundred kilograms of greasy matter. He stirred during a quarter of an hour and let it set until obtaining perfect limpidness. This method of extraction has a considerable advantage over that which has been previously essayed. The separation is well made and the organized tissues which do deposit are not altered.

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IV. Crystallization in a mass.—In order to separate the oleomargarine of the stearine separated crystallizers or crystallizations at unequal temperatures have been already employed. He contrived for this purpose the following method, which produces a very perfect separation, and is as follows: He rendered the molten fat in a vessel which must be sufficient for containing it. This vessel is placed in a washtub of strong wood, which serves as a water bath. In this washtub he put water at the fixed temperature of 86° Fahrenheit for the soft fats proceeding from the slaughter-houses and 98° for the harder fats, such as mutton fat. Afterward the washtubs are covered, and after a certain time, more or less long, according to the fats, the stearine is deposited in the form of teats at the middle of the oleomargaric liquid.

V. Separation by centrifugal force.—In order to avoid the numerous inconveniences of the employment of the presses which have been hitherto used he caused the mixture of stearine and oleomargarine to flow into a centrifugal machine called "hydroextractor." The greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion, and the crystals of stearine are entirely exhausted without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine soft enough for rendering necessary the stroke of a press as a last operation; but in this case this operation has little importance, because it is applied only to a fraction of the product. In all cases

the oleomargarine is separated from the stearine when it is cold and passed to the cylinder, constituting, especially if its yellow color has been raised, a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of "margarine;" but if it is desired to transform it into more perfect butter he employed the following means:

VI. In the methods hitherto employed the margarine is transformed into cream and this latter into butter. This complicated operation has many inconveniences. He obtained the same result by the following manner: He took ten liters of natural and fresh cream of milk. He added ten grams of bicarbonate of soda and two hundred grams of the udders of a cow, which must be fresh and well hacked in order to give all the mammary pepsin. The fresh udder may be replaced by udder collected in slices in sea salt. After a maceration of an hour he passed the whole through a very fine sieve. He added the necessary quantity of yellow color which is employed for the ordinary butter, and he put these ten liters into a hundred kilograms of liquid margarine at 70°. He stirred or mixed until the combination was complete—that is to say, 712 until the pepsin had effectuated its action. At this moment the liquid becomes thick; it takes the taste of cream; and after it has been more thoroughly agitated he let the same become completely cold. When the butter was cold and solid he coarsely scraped it in order to pass it between two large cylinders, which gave it the homogeneousness and the consistency which are the qualities of natural butter.

VII. When it is desired to produce butter intended to be preserved, which must contain no animal matter, he plunged the udders into pure water, instead of cream, in order to macerate the same. Afterward the water which proceeds from this operation is mixed with the margarine at about 86° of temperature—that is to say, to a degree which permits the pepsin to effectuate its action without production of cream. After an hour he let the liquid set, and the margarine which is decanted is mixed, after it has been reduced in temperature to about 71°, with an emulsion of butter made with five liters of water, five kilograms of butter, one kilogram of sea salt, or more, according to the uses, and ten kilograms of bicarbonate of soda. When he added this emulsion with the margarine which had already been submitted to the peptic action he obtained a rapid combination, and all the molecules take the qualities of the ordinary butter. It is a delicate operation, which must be very exactly made.

VIII. For the long conservations he only treated the margarine by the mammary pepsin, as before described. He decanted it in order to avoid any trace of water or animal matter. If it is desired to add ordinary butter, he did that at the temperature of 71° by well diluting it.

IX. The stearine which has been separated from the margarine forms a hard fat, which can be bleached by the known processes in order to produce wax candles of lower quality; but it is preferable to saponify it by any convenient process and crystallize the greasy

acids (which are charged with from seventy to eighty per cent. of stearic acid, instead of fifty) in a chamber heated to 96°, so as not to let them become hard by the cooling. In this state they can be pressed under heat in order to produce stearic acid much superior to that of the trade, both by its beauty and by its point of melting.

What is claimed is—

1. The improved material herein described, produced by treating animal fat so as to remove the tissues and other portions named with or without the addition of substances to change the flavor, consistency, or color, as set forth.

2. The process herein described of treating animal fats in the production of oleomargarine.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, [L. S.]
CHAS. M. FIELD, *President.*

Witnesses:
GEO. H. SONNEBORN.
WM. H. SONNEBORN.

713 *Translation Mege French Patent.*

Ministry of Commerce.

Certificate of Patent.

Descriptive memore attached to the patent certificate for 15 years, taken July 15th, 1869, by M. Mege Hippolyte, represented by Mr. Layford, in Paris, Boulevard Strasbourg, No. 23, and which has been issued to him by a decree by the ministerial secretary of state of the department of agriculture and commerce Oct. 2d, 1869, for the production of certain fatty bodys of animal origin.

Patent No. 86480.

The fat (called fat "en branches") is employed in the preparation of various very imperfect fats, especially in the production of molten fat, used principally in the fabrication of fatty acids. I myself have, some years ago, taken patents for the improvement of these products, but these researches pertained to the domain of the common industrial pursuit. The present patent, however, has no connection with its predecessors; it is no longer a question of improving the fatty acids and their soaps, but of making neutral new products, superior by their nature and properties.

This drawing is based on the following deductions of modern science:

1. That the odoriferous, colored, acrid, and rancid substances do not pre-exist in the natural fat.

2. That they are developed by the action of the organized tissues under the influence of fermentation, heat, and chemical agents.

3 That the fats of milk, called butter, are practically but the subcutaneous fat modified first by the cellular tissue and then by the organized tissue of the milk gland.

On applying these researches to domestic economy with a high aspiration there is obtained from the crude fat, 1, a fine fat, without taste or smell, comparable to the most desirable fats; 2, a variety of real butter taken from its source and made as in the milk secretion, but superior to milk butter as to its preservation. These new products are obtained by partly known and partly unknown means, the entirety of which constitutes the following procedure:

1. Complete washing.—This is done by crushing the fresh fat under a spray of fresh water, which falls together with the fat between two cylinders. Subdivided by the water and the pressure the fat falls into a tank, where a current of water completes the washing.

2. Artificial digestion.—This fat, from which all soluble animal matters have been removed, is mixed with artificial gastric juice (infusion of a pig's stomach in acidulated water) in sufficient quantity to immerse it, and the whole is kept at the temperature of the animal body until all the molten fat appears in a clear layer on the surface. It is allowed to settle, and the sediment is submitted to another operation in order to extract all the fat which, in this case, has no longer the animal odor, but the taste of delicate fat.

3. Pressure.—This operation is intended to separate the hard constituent, which renders the fat granular and causes it to con-
714 geal rapidly and to stick to the palate. It is known that with the commercial methods this is very difficult work. It can be done by the following method: The clear fluid fat is poured into vessels with an opening at the bottom and containing a layer of tepid water. They are closed, and when, by reason of the cooling, the crystallization is completed the water is drawn off and the vessel inverted, allowing the mass to fall upon the table. It is cut into cakes one to two centimeters thick. These cakes are wrapped up in canvass and put under a press between hot plates. Thus about 60 per cent. of a mixture of margarine and oleine are obtained of a composition like lard, but of a superior flavor. The solid part remains in the canvas.

4. Uniform solidification.—In order to get this fat solid and not granular without introducing air, which would impair its keeping quality, it is poured into a tinned iron vessel, filling the latter completely. This closed vessel contains a stirring apparatus put in motion from the outside; moreover, it is surrounded by cold water, so that the cooling fat is stirred without air. Having become thick and uniform, it is poured into another vessel, where it becomes solid and even brittle if the temperature is low.

5. Ductility.—Since fatty bodies are usually soft and ductile, the cutting machine is now resorted to which perfumers use to cut soap into ribbons; the blades, however, are set to shave it into thin slices instead of cutting. This can also be done by hand. Thereby the fat gets the desired ductility.

6. Decolorization.—Generally the described fat is of a slightly yellow tinge. To remove this color without attacking the fat the property of fat to remain fluid for a time while cooling is made use of. In this state it is mixed with a fine acid—for instance, muri-

atic acid—in sufficient quantity to remove the color, and it is washed carefully with warm water, renewing the latter until all traces of acid have disappeared. The whole of this procedure, with or without pressure, is naturally applicable to all fats.

Whatever fat be used there is obtained by this procedure a sort of white or slightly yellowish lard of absolute purity and of the taste of almonds, hitherto unknown of animal fats. This new fatty body is especially applicable for—

1. Alimentation—replacing fats and lard.
2. The fabrication of toilet soaps of a superior quality.
3. The fabrication of ordinary soaps to replace olive oil and get a large yield.
4. The lubrication of machinery, which is never attacked if about $\frac{1}{100}$ of calcined magnesia be added. Moreover, another distinct product is obtained by this procedure destined to render great services to domestic economy, namely, the fatty body obtained as above consists, like butter, of "magnesie" (intended for margarine), oleine, and a small amount of volatile oil. This fatty body, when pure and it has undergone no change by heat or chemical agents, is the fat which the cow re-absorbs in its organism to pass it through the milk gland. After this passage the fat is scarcely changed and becomes the variety of fat known as butter. Really when the fat is obtained fresh and pure and is bleached by the aid and under the influence of oxydizing agents it assumes the usual taste of fats, but it is no longer the same after the following operation, which transforms it by a kind of physiological process. This metamorphosis, simple enough, is accomplished sufficiently by the following means, for it must not be forgotten that the fresh and pure fat obtained as above is but butter in its primitive state. The fat is therefore mixed at the temperature of the animal body with its weight of water,
715 to which has been added $\frac{1}{8}$ part of mammary tissue, $\frac{1}{100}$ of bicarbonate of sodium, $\frac{1}{6}$ part of caseine of fresh milk, and a sufficient quantity of yellow color. The mixture is kept at the animal temperature and agitated for at least three hours. When the transformation is complete it is allowed to cool, the granular and brittle state being prevented by the measure stated in § 4 and 5, and the result is two varieties of butter, superior to ordinary butter for the purposes of consumption and of preservation. The navy can hence in the future have fresh butter at its disposal.

I have said that if we leave out the mammary tissue, which is but the organized net-work of the cow's udder, we get an inferior product. As to the hard portion remaining in the canvas and forming the residues after the pressure, it is put into the market for the production of stearic acid by the ordinary means.

For this purpose the following operations can be employed profitably:

1. Saponification in the cold, with soda, at about 50°.
2. The use of the cutting machine used by perfumers to cut soap in the form of ribbons.
3. The warm decomposition by means of sulphuric acid.
4. The crystallization by the means described for fat (§ 3).

5. The cold compression followed by hot compression of the residues.

Paris July 1st 1869
Mr. MEGE
signed, C. LAFOND.
Paris Feb. 4th 1884
For certified conformed distribution
Chief of the bureau of
industrial property
signed

Compared,
Chief of the bureau
signed

716 EXHIBIT MEGE ENGLISH PATENT.

Letters patent to Hippolyte Mege, of Paris, Boulevart de Strasbourg, No. 70, chemist manufacturer, for the invention of "the preparation and production of certain new animal fatty bodies."

Sealed the 1st January, 1870, and dated the 17th July, 1869.

Provisional specification left by the said Hippolyte Mege at the office of the Commissioner of Patents, with his petition, on the 17th July, 1869.

I, Hippolyte Mege, of Paris, Boulevart de Strasbourg, No. 70, chemist manufacturer, do hereby declare the nature of the said invention for "the preparation and production of certain new animal fatty bodies" to be as follows:

The object of my invention is to make neutral products new by their nature and superior in quality.

The invention is based on the deductions of modern science, which prove, first, that odoriferous coloring matters, volatile and becoming rancid (*acres et rancissantes*), do not pre-exist in the natural fats called suets (*graisses en branches*); second, that they are developed by the action of the organized tissues under the influence of fermentation, of heat, or of chemical agents; third, that the fats of milk, called butter, are only grease from fat modified, first, by its cellular tissue, and afterwards by the organized tissues of the udder. In applying these facts industrially there is obtained from suet, first, a virgin fat without any smell or odour of fat and like the best fatty bodies; second, a variety of true butter, taken at its source, formed as in ordinary lactation, and superior to butter from milk by the length of its preservation. These new products are obtained by known and unknown means, the combination of which constitutes the following process:

I. Complete washing.—This is obtained by reducing or crushing the fresh suet under a shower of fresh water, which falls between two rollers at the same time as the fat, which, divided by the water and the pressure, falls into a vessel in which the washing is completed by a stream of water.

II. Artificial digestion.—This fat, deprived of all soluble animal matters, is mixed with artificial gastric juice (infusion of a pig's stomach in acidulated water) in sufficient quantity to immerse it,

and the whole is kept at the temperature of animal heat until all the dissolved fat appears limpid on the surface. It is left to deposit, and the deposit is submitted to a new operation to extract all the fatty body, which in this case has no smell of animal fat and all the odour of the most delicate fatty body.

III. Pressure.—This operation is intended to separate the hard part, which makes the fatty body grained and coagulate rapidly. In the ordinary mode this operation is effected with difficulty. It becomes easy by the following means: The fatty body, liquid and limpid, is poured into boxes which have an opening at bottom and contain a layer of tepid water. They are covered, and when by the cooling the crystallization is effected the water is removed by the opening, the box turned upside down, the mass allowed to fall on a table, and cut into pieces about half an inch thick; these pieces are wrapped in cloth and put in a press between hot plates. There is thus obtained about 60 per cent. of a mixture of margarine and oleine of a composition identical to lard, but of superior savour; the solid part remains in the cloths.

717 IV. Regular solidification.—To have this fatty body solid and uniform, deprived of the granular state without introducing air, which injures its preservation, it is put into a vessel of tinned iron, which is quite filled therewith. This vessel, well closed, is provided with an agitator, which receives its motion from the outside; it is, besides, plunged into cold water, so that the fatty body being cooled and agitated without air, becomes thick and uniform. It is then put into a vessel, in which it becomes quite solidified to a hard and brittle state if the temperature is cold.

V. Malleability.—As it is usual to see fatty bodies soft and ductile, the cutter used by perfumers in cutting soap is employed, only the blades are arranged so as to scrape into thin pieces instead of cutting. This operation, which gives the fatty body the desired ductility, can be effected by hand.

VI. Decoloration.—Generally the preceding fat is slightly colored yellow. To remove this color without attacking the fatty body, the property which it has to remain for some time limpid, even when cold, is taken advantage of. In this state a pure acid—hydrochloric, for example—is mixed with it in sufficient quantity to remove the color, and the fatty body is washed with hot water, which is changed until all trace of acid has disappeared. The combination of this process, with or without pressure, is naturally applicable to all suets (*graisses en branches*). Whatever suet be employed, I obtain by this process a sort of white or slightly yellow lard of absolute purity and having an almond odour hitherto unknown in animal fats. This new fatty body is especially applicable, among other purposes, first, for food to replace fats and lard; second, in the manufacture of fancy or toilet soaps which are of superior quality; third, in the manufacture of ordinary soaps to replace olive oil and to give a superior product; and, fourth, for greasing or lubricating machinery, which it does not injuriously affect if a little calcined magnesia (about a hundredth part) be added. There is, besides, obtained by this process a distinct product destined to render great

service in domestic economy. In fact, the fatty body obtained as above is composed like butter of margarine, oleine, and a little odoriferous oil. It is this fatty body when it is pure and which has experienced no modification, either by heat or by chemical agents, which the cow resorbs into her economy in order to pass it into her mammæ. After this passage the above fatty body is in fact scarcely modified and becomes the variety of fat called butter. In fact, when the virgin and pure fat is obtained, as above stated, it becomes white in the air and under the influence of oxidating matters and receives the usual flavour of fat; but it is no longer so after the following operation, which transforms it by a sort of physiological action. This metamorphosis, which is very simple, is effected sufficiently by the following means, for it must not be forgotten that pure yellow fat obtained by the process above described is nothing but butter in its primitive state: I take this fatty body and mix it at animal heat with its weight of water, in which have been mixed a fiftieth part of mammary tissues, a hundredth part of bicarbonate of soda, a fiftieth part of caseum of fresh milk, and a sufficient quantity of yellow color. I cause it to digest for at least three hours while agitating and maintaining the animal heat. When the transformation is effected I leave it to cool, I prevent the granular and brittle state as is before described (IV and V), and I have two varieties of butter superior to ordinary butter. I may observe that if the mammary tissue be dispensed with, which is nothing but the organized system of the udder of the cow, an inferior product is obtained. With regard to the hard part remaining in the tissues and forming cakes after the pressure, it may be made into stearic acid by ordinary means. With this object the following operations may be applied with advantage: First, saponification, known as cold saponi-
718 fication, with soda; it is effected at about 120° Fahrenheit; second, the application of the cutter used by perfumers to cut soap into thin pieces; third, the decomposition in a tepid state by sulphuric acid; fourth, the crystallization by the means before described for the fat (III); and, fifth, the pressure under heat, followed by the cold pressure of the residues.

Specification in pursuance of the conditions of the letters patent filed by the said Hippolyte Mege in the Great Seal Patent Office on the 7th January, 1870.

To all to whom these presents shall come I, Hippolyte Mege, of Paris, Boulevart de Strasbourg, No. 70, chemist manufacturer, send greeting:

Whereas Her Most Excellent Majesty Queen Victoria, by her letters patent, bearing date the seventeenth day of July, in the year of our Lord one thousand eight hundred and sixty-nine, in the thirty-third year of her reign, did, for herself, her heirs, and successors, give and grant unto me, the said Hippolyte Mege, her special license that I, the said Hippolyte Mege, my executors, administrators, and assigns, or such others as I, the said Hippolyte Mege, my executors, administrators, and assigns, should at any time agree with, and no

others, from time to time and at all times thereafter, during the term therein expressed, should and lawfully might make, use, exercise, and vend within the United Kingdom of Great Britain and Ireland, the Channel Islands and Isle of Man, an invention for "the preparation and production of certain new animal fatty bodies," upon the condition (amongst others) that I, the said Hippolyte Mege, my executors or administrators, by an instrument in writing under my or their or one of their hands and seals, should particularly describe and ascertain the nature of the said invention and in what manner the same was to be performed and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said letters patent:

Now know ye that I, the said Hippolyte Mege, do hereby declare the nature of my said invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement thereof—that is to say:

The object of my invention is to make neutral products new by their nature and of superior quality.

The invention is based on the deductions of modern science, which prove, first that odoriferous coloring matters, volatile and becoming rancid (*acres et rancissantes*) do not pre-exist in the natural fats called suets (*graisses en branches*); second, that they are developed by the action of the organized tissues under the influence of fermentation, of heat, or of chemical agents; third, that the fats of milk, called butter, are only grease from fat modified, first, by its cellular tissue and afterwards by the organized tissues of the udder.

In applying these facts industrially there is obtained from suet, first, a virgin fat without any savor or odor of fat and like the best fatty bodies; second, a variety of real butter, taken at its source, formed as in ordinary lactation and superior to butter from milk by the length of its preservation.

These new products are obtained by known and unknown means, the combination of which constitutes the following process:

I. Complete washing.—This is obtained by reducing or
719 crushing the fresh suet under a shower of fresh water, which falls between two rollers at the same time as the fat, which, divided by the water and the pressure, falls into a vessel in which the washing is completed by a stream of water.

II. Artificial digestion.—This fat, deprived of all soluble animal matters, is mixed with artificial gastric juice in sufficient quantity to immerse it, and the whole is kept at the temperature of animal heat until all the dissolved fat appears limpid on the surface. It is left to deposit, and the deposit is submitted to a new operation to extract all the fatty body, which in this case has no smell of animal fat and all the odor of the most delicate fatty body.

III. Purification.—When the fat is melted it is passed through a sieve, from which it falls into a tub immersed in hot water, where it is kept at the melting temperature until it is absolutely limpid.

IV. Pressure.—This operation is intended to separate the hard part, which makes the fatty body grained and coagulate rapidly. In the ordinary mode this operation is effected with difficulty. It be-

comes easy by the following means: The fatty body, liquid and limpid, is poured into boxes, which have an opening at bottom and contain a layer of tepid water. They are covered, and when, by the cooling, the crystallization is effected the water is removed by the opening, the box turned upside down, the mass allowed to fall on a table, and cut into pieces about half an inch thick. These pieces are wrapped in cloths and put in a press between hot plates. There is thus obtained about 60 per cent. of a mixture of margarine and oleine of a composition identical to lard but of superior savor. The solid part remains in the cloths.

V. Regular solidification.—To have this fatty body solid and uniform, deprived of the granular state without introducing air, which injures its preservation, it is put into a vessel of tinned iron, which is quite filled therewith. This vessel, well closed, is provided with an agitator, which receives its motion from the outside. It is, besides, plunged into cold water, so that the fatty body, being cooled and agitated without air, becomes thick and uniform. It is then put into a vessel, in which it becomes quite solidified to a hard and brittle state if the temperature is cold.

VI. Malleability.—As it is usual to see fatty bodies soft and ductile, the cutter used by perfumers to cut soap into pieces is employed, only the blades are arranged so as to scrape into thin pieces instead of to cut. This operation, which gives the fatty body the desired ductility, can be effected by hand.

VII. Decoloration.—Generally the preceding fat is slightly colored yellow. To remove this color without attacking the fatty body, the property which it has to remain for some time liquid, even when cold, is taken advantage of. In this state a pure acid—hydrochloric, for example—is mixed with it in sufficient quantity to remove the color, and the fatty body is washed with hot water, which is changed until all trace of acid has disappeared. This combined process, with or without pressure, is naturally applicable to all suets (*graisses en branches*). Whatever suet be employed I obtain by this process a sort of white or slightly yellow lard of absolute purity and having an almond odor, hitherto unknown in animal fats. This new fatty body is especially applicable, among other purposes, first, for foods to replace fats and lard; second, in the manufacture of fancy or toilet soaps which are of superior quality; third, in the manufacture of ordinary soaps to replace olive oil and to give a superior product; and, fourth, for greasing or lubricating machinery, which it does not injuriously affect if a little calcined magnesia (about a hundredth part) be added. There is, besides, obtained by this pro-
720 cess a distinct product destined to render great service in domestic economy. In fact, the fatty body obtained as above is composed, like butter, of margarine, oleine, and a little odoriferous oil. It is this fatty body, when it is pure and which has experienced no modification, either by heat or by chemical agents, that the cow resorbs into her economy in order to pass it into her mammæ. After this passage the above fatty body is in fact scarcely modified and becomes the variety of fat called butter. This metamorphosis, which is very simple, is effected sufficiently by the following means,

for it must not be forgotten that pure yellow fat obtained by the process above described is nothing but butter in its primitive state. In fact, when the virgin and pure fat is obtained, as above stated, it becomes white in the air and under the influence of oxidating matters, and receives the usual flavor of fat; but it is no longer so after the following operation, which transforms it by a sort of physiological action. I take this fatty body and mix it at animal heat with its weight of water, in which have been mixed a fiftieth part of mammary tissues, a hundredth part of bicarbonate of soda, a fiftieth part of caseum of cold milk, and a sufficient quantity of yellow color. I cause it to digest for at least three hours while agitating and maintaining the animal heat. When the transformation is effected I leave it to settle, I decant, I leave it to cool. I prevent the granular and brittle state, as is before described, and I have a variety of butter superior to ordinary butter in its use for food and in its preservation. I may observe that if the mammary tissue, which is nothing but the organized system of the udder of the cow, be dispensed with, an inferior product is obtained. The butter thus obtained is preserved butter; but fresh butter, identical with ordinary butter, is also obtained by agitating the above mixture at a lukewarm temperature until the formation of a cream possessing all the properties of real cream. This cream is afterwards treated in the usual manner in order to extract the butter. With regard to the hard part remaining and forming cakes after the pressure it may be made into stearic acid by ordinary means—that is to say, I can apply, as well as what follows, the ordinary means in order to obtain a new result, viz: First, ordinary saponification and decomposition, and, second, pressure into cakes; or I can, according to circumstances, obtain less altered products. With this object the following operations may be applied with advantage: First, saponification, known as cold saponification, with soda; it is effected at about 120° Fahrenheit; second, the application of the cutter used by perfumers to cut soap into thin pieces; third, the decomposition in a tepid state by sulphuric acid; fourth, the crystallization by the means before described for the fat; and, fifth, the pressure under heat followed by the cold pressure of the residues. If the stearine has been well purified I dispense with the pressings. All the iron implements which come in contact with the suets and fats should be carefully tinned. The press should be covered with a thin plate of tin, and the plates which separate the cakes of fat which are pressed should be doubly tinned.

And, having now described the nature of my said invention and in what manner the same is to be performed, I declare that I claim treating suet substantially by the means and in the manner hereinbefore described, and the production by such treatment, first, of a virgin fat without odor or savor of fat; and, second, a variety of real butter taken at its source, formed as in ordinary lactation, and superior to butter obtained from milk by the length of its preservation.

In witness whereof I, the said Hippolyte Mege, have hereunto set

my hand and seal this thirtieth day of December, one thousand eight hundred and sixty-nine.

H. MEGE. [L. S.]

Witness:
CH. ARMENGAUD,
Civil Engineer, 23 Boulevard de Strasbourg a Paris.

721 *Translation Austrian Patent.*

Production of pure fatty bodies of animal origin which do not become rancid.

My invention consists in the production of neutral fatty bodies of hitherto unknown natural appearance and excellent properties. By means of a special treatment of the crude tallow I obtain a pure fat devoid of smell and taste, which does not become rancid and which keeps fresh for a long time. This substance I obtain through procedures partly known, partly new, the entirety of which constitutes the following methods:

1. Perfect washing.—This is done by crushing the fresh fat just taken from the animal between rollers under a spray of fresh water. The fat subdivided finely by the action of the water and the pressure falls into a tub, where the washing is completed by a current of water.

2. Artificial digestion.—This fat, from which all soluble animal substances have been removed, is mixed with artificial gastric juice (maceration of a pig's stomach in acidulated water) in sufficient quantity to immerse it, and the mixture is kept at the temperature of the animal body until the fat appears as a clear layer on the surface. The mixture is allowed to settle and the sediment is subjected to another operation in order to extract all fatty matter, which in this case has no longer the odor of animal fat, but the taste of finest fats.

3. Pressure.—This operation separates the hard constituent, which makes the fat granular and causes it to congeal rapidly. This work, hitherto very difficult, is carried out on a commercial scale in the following manner: The fluid clear fat is poured into vessels with an opening at the bottom and containing a layer of tepid water. They are covered, and when the cooling and the crystallization have taken place the water is drawn off through the opening, the vessel is inverted, and the mass allowed to fall upon a table. It is cut into cakes one to two centimeters thick. These are put into canvas and pressed between two warm plates. By this method there is obtained about 60 per cent. of a fatty body resembling butter and identical in composition with lard, but free from odor and of a perfectly pure taste. The solid portion remains in the canvas.

4. Uniform solidity is given to this fatty body in the following manner: In order to make it hard and not granular without admitting air it is poured into a tinned iron vessel filled thus completely. This well-closed vessel contains a stirring apparatus kept in motion from the outside. The vessel is, beside, kept surrounded by cold water, so that the fat which is being stirred while cooling

without the admission of air becomes thick and uniform. It is then put into another vessel where it becomes completely solid and hard.

This hard fat is finally cut or sliced into thin slices by some cutting machine similar to the mechanical arrangement used for cutting fine soaps, the blades being set to furnish thin slices. This work, giving the fat the proper ductility, can also be done by hand.

5. Decolorization can be employed or omitted as desired. This fat is usually of a yellow tinge. This color can be removed easily and without damage by utilizing the property of the fat of remaining fluid for some time in cooling. In this state it is mixed with
721½ enough fine acid—for instance, muriatic acid—to remove the color. It is then repeatedly washed with warm water until the last trace of the acid has been removed.

This entire procedure, with or without pressure, can be employed in the case of any fresh fat just taken from the animal. By means of the same I obtain partly solid, partly soft, white, or faintly yellowish perfectly pure fatty bodies, which have a faint flavor of almonds. These new fatty bodies are applicable to various industrial purposes, according to their degree of consistency, especially to—

1. The fabrication of toilet soap, particularly fine and beneficial to the skin.

2. The fabrication of ordinary soaps, to replace the olive oil and give a large yield.

3. The lubrication of machinery, which is never attacked by this excellent lubricating material, especially when $\frac{1}{1000}$ part of calcined magnesia has been added.

I claim, therefore, as my invention the above-described mode of preparation of a wholly new fatty body. The peculiar points of importance of my procedure consist in washing, digesting, pressing, solidifying, and decolorizing.

For H. MEGE,
Per RODIGER.
M. P.

Was compared with the original description of the patent issued to Hippolyte Mege Oct. 31st, 1869, No. 15343, which has since been declared expired by order of the ministry of commerce of Mai 26th, 1876, No. 11473, on account of not being carried out in this country, the description being kept publicly in No. 19–604, IV–159, and was found identical word for word.

Vienna, March 5th, 1884.

The imperial archives of patents.

DR. JOS. G. RITTER v. WOERZ,
Section Councillor in the Imperial Ministry of Commerce.

The genuineness of the signature of Dr. Jos. G. Rittier von Woerz, section councillor in the imperial ministry of commerce, is hereby certified.

Presidential bureau of the imperial ministry of commerce, Vienna, March 5th, 1884.

A representative of the presiding board,

DR. ANTON RITTER v. HOFFMAN & HENKOF,
Imperial Ministry of Commerce.

Business number.	Date of grant of patent.	Name, character, and residence of patentee, and name of firm acting on the patent.	Object of the patent.	Is secresy of the description requested.	Original term granted to the patent.	Date of prolongation.	Period of prolongation.	Expiration of the Patent.			Remarks.
								Date of cognizance.	Extent and title of expiration.	Number of description.	
15343 2181	Oct. 31, 1869.	Hippolyte Mege, chemist and manufacturer in Paris. ..... Authorized agent, Fr. Rodiger, in Vienna.	Invention of a method to produce pure fats of animal origin which do not become rancid.	Public	One year.	Dec. 1, 1870 No. 21818 1994 Nov. 28, 1871 No. 23336 2006 Feb. 5, 1873 No. 36633 2815—1872 Dec. 12, 1873 No. 33910 Nov. 16, 1874 No. 33747	Second year. Third year. Fourth year. Fifth year. Sixth year.	May 26th, 1876. No. 11473.	On account of discontinued application in this country according to § 29, 2 a, of the patent law, it is considered expired.	CI IV 159	Priority, July 26th, 1869, 11½ a. m. Comp. for second year, 21818—870. Under No. 21818—Dec. 1st, 1870—a further prolongation for one year, until Oct. 31, 1871, was granted and ordered to annex the certificate concerning the clause of addition to the prolongation for the second year. Comp. 3rd year, 23336-71. Under No. 23336-71, a further prolongation until Oct. 31st, 1872, only was granted. Under No. 24121-71 the clause of prolongation of the second and third year was added to the certificate. Comp. 4th year, 29799-72. No. 29799-72—the description—on account of right of application—forwarded to the ministry of Lower Austria, 30—10, 72. 36633-72, description replaced 23—12, 72. 36633-72, the proper-timed beginning of the application was taken notice of. Comp. 5th year, 33910-73. Comp. 6th year, 33147-74. Comp. 7th year, 35091-75. 35091-75, description forwarded to the municipal office of Vienna on account of ?, 23—11, 75. 11473-76, description replaced 6-5, 876. 11473-76, the certificate taken for cancelation and the expiration noted in the May catalogue.

COMPARED AND FOUND IDENTICAL WITH THE SUBJECT IN TOM. XIX, FOLIO 604, OF THE PATENT REGISTER, VIENNA, JANUARY 16TH, 1884.

Imperial Archives of Patents—NIETL.

Extract from the Register of Patents of the Imperial Archives of Patents, Tom. XIX., Fol. 604.

724 *Translation Mege Bavarian Patent.*

Royal Bavarian Ministry of the Interior, Department of Agriculture, Trade, and Commerce.

Concerning the patent of Hippolyte Mege, of Paris, of April 8, 1873.

No. 1074.

MUNICH, *Jan. 25th*, 1884.

In reply to your inquiry of 19th of last month it is hereby confirmed that the patent on a new preparation of fatty bodies of animal origin had originally been granted to Hippolyte Mege, of Paris, on the eighth of April, 1873, for the space of two years; that after the lapse of said time the patent was prolonged (renewed) from April 8th, 1875, for another year in favor of the engineer Toussaint, of Paris, the merchants, A. Doctor, L. Jaeger, M. Rickoff, and the manufacturer, D. Mousson, all of Frankfort-on-the-Main, as legal successors to Hippolyte Mege, from the eleventh of March, 1874, and that said patent became void on the 8th day of April, 1876, on account of expiration of the granted term.

(Signed) ——— ———,
The General Secretary.
——— ———,
Ministerial Councillor.

Mr. Eugen Gugel, present.

KINGDOM OF BAVARIA.

Patent Certificate.

No. 1217.

In consequence of an application by Hippolyte Mege, of Paris, to the ministry of the interior, dated the 5th and 6th days of the present month, to obtain a patent on a new mode of preparation of fatty bodies of animal origin, whereby new products can be obtained and present products be improved, he having obtained in France a patent for 15 years from the 15th of July, 1869, and a description of said invention accompanying said petition, the desired patent is hereby granted to him for the space of two years from the date of this certificate for the entire domain of the kingdom, with the provision that he is to be authorized to introduce in Bavaria only this mode of preparation specified by him and in a manner stated by the law of the 11th of September, 1825, especially by § 9 of the same, and further by the instruction of execution of April 21st, 1869, and as regards the employment of the same in the Palatinate, according to the direction of the laws of that section, with special regards for the rights of others, notably those who have previously invented or

introduced the invention described by him, as well as those
725 who may improve upon it. It is to be distinctly understood that this patent will be retracted as void if the same is not put into execution within one year from the date of this certificate and if the proof of its execution is not presented to the ministry of state within said period and without further notification.

Munich, April 8th, 1873.

Royal State Ministry of the Interior, Department of Agriculture, Trade, and Commerce.

(Signed) V. PFENER,
The General Secretary.

(Signed) V. Du BOIS,
Ministerial Councillor.

Patent for Hippolyte Mege, of Paris, on a new mode of preparation of fatty bodies of animal origin, whereby new products can be obtained and present products be improved.

The identity of the preceding two copies with the original is hereby certified, and it is confirmed that the said patent No. 1217 was originally granted to Hippolyte Mege, of Paris, by the ministry for the term of two years from the eighth of April, 1873, was prolonged after the lapse of that time for another year in favor of the engineer Toussaint, of Paris, the merchants, A. Doctor, L. Jaeger, M. Rickoff, and the manufacturer, D. Mousson, all of Frankfort-on-the-Main, the legal successors of Hippolyte Mege, after the eleventh of March, 1874, and that the same patent expired on the eighth of April, 1876, on account of the end of the granted term.

Munich, March 19, 1884.

Privy Bureau of Expedition of the Royal Bavarian State Ministry of the Interior.

MUXEL,
Privy Secretary.

Application for Patent for the Production and Classification of Certain Fatty Bodies of Animal Origin.

Specification.

The crude fats and the crude tallow have until the present time been used in a very imperfect manner for the preparation of edible fat or soaps or the fabrication of melted tallow for the preparation of fatty acids by means of chemical modes of saponification or other purposes.

The new modes of procedure described herein consist both of chemical and physiological processes; they are not intended to improve the former methods of fabrication, but, on the contrary, on account of their nature and better properties, furnish neutral and new products. They are especially intended to benefit the navy and the less wealthy classes by furnishing excellent edible and preservable fats at a price considerably lower than that of present similar products—for instance, butter and the finer grades of fats.

The reduction in the price of butter will in a large measure contribute to the general wealth, for stock-raisers, instead of making butter, will feed their milk to calves and thereby get more stock, thus furnishing more cattle for slaughtering purposes and at a lower price. The new procedure is also of considerable importance, from a hygienic point of view, in doing away with the emanation of bad odors inevitable with the former chemical methods and due to the excessive high temperature to which fats had been exposed.

726 The new procedure depends on the following conclusions of modern science: 1, that the malodorous, colored, acid and rancid ingredients are not originally contained in the crude fats as they occur in nature; 2, that these harmful substances are developed by the activity of the organized tissues under the influence of fermentation, heat, and chemical agents; 3, that the fats of milk, termed butter, consist only of the immediate fat which is altered first by a cellular tissue and then by the organized tissue of the udder. By utilizing these principles in industrial pursuits or in domestic economy there is obtained from the crude fats and the tallow—

A. A pure fat, without the customary fatty smell and taste, which does not stick to the palate and which resembles the fatty bodies most desired for eating purposes.

B. Stearine for candles.

C. As a residue common tallow.

D. This fat, really identical with the fat of butter, taken from its source before it has been changed in the milk gland, can be made into different kinds of butter, which, although prepared by an artificial process, is really butter, and differs only from the ordinary butter by keeping fresh for a much longer length of time.

The means employed in the new preparation of these partly new, partly known, products constitute in their details and in their entirety the invention which we claim as our property. They are as follows:

1. Washing and crushing.—The crude fat is exposed to a jet of cold water between the conical cogs on two iron cylinders; it is finely subdivided by the current of water and the pressure, and falls thence into a tank, where a current of cold water completes the washing.

2. Artificial digestion.—This fat, now freed from all soluble animal substances, is mixed with artificial gastric juice (stomach of the pig or sheep in acidulated water) to the extent of immersing it completely or to 1,000 kilo of fat, 300 kilo of water, 1 kilo bicarbonate of sodium, and two stomachs (pig or sheep) are added. This mixture is then kept at the temperature of the animal body (by means of steam-pipes or otherwise) until all the molten fat has been dissolved by the pepsin or the stomachs and appears in a clear layer on the surface. It is allowed to settle or it is decanted and the process repeated in order to extract all the fatty constituents, which now have lost the odor of animal fat, but have obtained a particular taste. The residue is tallow.

3. Cooling.—The fluid fat is poured into vessels which have an opening at the bottom and contain a layer of tepid water. They are covered, and, when crystallization has occurred in consequence of

cooling, the water is drawn off through the opening, the vessel is inverted, and the cake is allowed to fall on a table.

4. Pressure.—This operation is intended to separate the hard constituent which makes the fat granular, congeal rapidly, and stick to the palate. The cooled fat is cut into slices about one inch thick and put into a cloth between hot plates of a press. The portion which runs off is a mixture of margarine and oleine, resembling lard in composition and of about the taste of fresh butter. It melts in the mouth like butter and does not stick to the palate like beef fat. The solid residue taken out of the cloth is good stearine, fit for making candles immediately.

5. Uniformity and ductility.—In order to remove the granular appearance of the margarine produced by congelation and to
727 give it the solid and uniform appearance usually possessed by fats and in order also to remove any air which may have entered and might interfere with its preservation, without admitting air again, a vessel is filled with the fat completely, closed, and a churning or stirring apparatus in its interior is set into motion. The margarine is thus kept in motion and is then withdrawn from the vessel before cooling. It is now hard or even brittle, according to the temperature. It is rendered soft and ductile by rolling it between wooden cylinders. It is put into the form of plates or filled in tubs to be put in the market.

6. Decolorization.—The first fat is ordinarily of a light yellow color. If it is desired to remove this color without attacking the fat the property which the fat possesses of remaining fluid for some time before cooling can be utilized. In this state an acid—for instance, muriatic acid—is added in sufficient quantity to remove the color, and it is then washed with tepid water until the last trace of acid has disappeared.

This entire procedure, with or without pressure, can be applied to all crude fats.

The white or faintly yellowish fat obtained by means of the described procedure is remarkably pure and has a taste of almonds, hitherto not known of any animal fat. It is especially available for—

A. Foods as a substitute for animal fats and lard.

B. For the fabrication of fine toilet soaps.

C. The manufacture of ordinany soaps to replace the olive oil.

D. The lubrication of machinery, which is never attacked if the one hundredth part of calcined magnesia be added to the fat.

E. The artificial production of butter.

7. Transformation into butter.—The pure fat which has undergone no change by heat or chemical agents is the same substance which the cow consumes in its organism in order to have it pass through the udder in the form of milk fat or butter. The fat is therefore but butter in its original form. This observation and the observation that the milk gland of the cow contains a kind of pepsin possessing the property of making a milky emulsion of fat and water are the basis of the industrial procedure of changing fat into butter, a physiological operation to be carried out as follows:

At the temperature of the animal body one part of fat is mixed with the same quantity of water, to which $\frac{1}{10}$ part (2 per cent. milk cheese or milk without water or cream in water) has been added, and with $\frac{1}{100}$ part of bicarbonate of sodium and $\frac{1}{10}$ part of the tissue of the mammary gland. The mixture is kept at the temperature of the body and allowed to work. When the fat becomes milky it appears at first like a thick milky cream; later on it changes into butter, which is allowed to cool with the precautions explained in arts. 3 and 5. The gland tissue of the mixture can also be replaced by artificial products, but with a less satisfactory result. Butter thus prepared keeps longer than milk butter and does not, like the latter, acquire the pungent odor to butyric acid or it contains less caseine, insoluble in ether, and may contain less water or buttermilk, as may be desired, than butter obtained in the usual manner.

Since the above-described modes of procedure, dependent on known and on unknown methods, are new in their industrial entirety and furnish new products, we claim them as our exclusive property for the entire term of the patents.

728 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Equity.

Messrs. Offield & Towle, sol'rs for complainants.

GENTLEMEN: You are hereby notified that on Friday, October 30th, 1885, at 11 o'clock a. m., we shall proceed to take the testimony of Gilbert A. Peck before Edwin L. Thurston, Esq., a notary public in and for Cook county and State of Illinois, at his office, room 27, No. 53 Dearborn street, Chicago, Illinois.

You are invited to be present and cross-examine the witness.

HILL & DIXON,
Sol'rs for Defendant.

We hereby accept service of the above notice this 30th day of October, A. D. 1885.

OFFIELD & TOWLE,
Sol'rs for Complainants.

729 United States Circuit Court, Northern District of Illinois.

THE COMMERCIAL MANUFACTURING COMPANY, Consolidated, *et al.*
vs.
FAIRBANK CANNING COMPANY. } In Equity.

At Chicago, in the northern district of Illinois, this 30th day of October, A. D. 1885, at 11 o'clock a. m., before me, Edwin L. Thurston, a notary public in and for Cook county, Illinois, at my office, room 27, 53 Dearborn street, Chicago, Illinois.

Present: L. Hill, Esq., on behalf of the defendant, and C. K. Offield, Esq., on behalf of the complainants.

And thereupon the following proceedings were had pursuant to the annexed notice:

GILBERT A. PECK, a witness on behalf of the defendant, being by me first sworn to tell the truth, the whole truth, and nothing but the truth, testifies as follows in answer to interrogatories propounded by Mr. HILL, defendant's counsel.

Q. 1. Are you the same Gilbert A. Peck who has heretofore testified for the defendant in this cause?

A. Yes, sir.

Q. 2. Since the complainants closed their proofs in New York city, on October 8th, 1885, have you made any experiment in chilling and pressing oleomargarine stock?

A. I have made four.

730 Q. 3. Where did you make them, and when?

A. At the works of the Fairbank Canning Co., the first three, Oct. 14th to 17th; the fourth, October 22nd.

Q. 4. Inasmuch as you have already testified to two experiments made by you in June, 1885, and numbered No. 1 and No. 2, we will designate these four experiments of October, 1885, as No. 3, No. 4, No. 5, and No. 6 in the order in which they were made. Will you now give us a full description of your experiment No. 3, that being the first experiment made by you in October, 1885?

A. On Oct. 15th, at 5 p. m., I took 90 pounds of seeded stock from the seeder that we were filling the press from and put it in a chilling pan or box, covered it over with a piece of muslin, fastened the muslin so it could not be disturbed without my knowing it, and set it in our chill-room, where we cool our beef; temperature of chill-room, 46° F.; temperature of stock in seeder when we put it into the chilling pan was 95°. The next morning at 10.20 we emptied the stock out by turning the pan bottom up. The sides of it showed 60°, the center 76°. We sliced it into slices ¾ to an inch in thickness, wrapped it in new cotton wrappers, such as are used in our regular pressing, and placed it in press between plates at a temperature of 80°. We ran the press slow, stopped several times from 5 to 8 minutes each time, and at 1.20 stopped the press entirely, as there was no more oil coming through the wrappers. We had 40 lbs. of oil in our pan that we caught it in. The wrappers absorbed 10 lbs.,

731 30 lbs. of stearine, and 10 lbs. of scrapings scraped from plates. The scrapings seemed to be mostly oil that had chilled on the plates. The oil was clear and of a good quality; also the stearine was dry, showing that all the oil had been pressed out.

Q. 5. You state that "I took 90 lbs of seeded stock from the seeder that we were filling the press from." Was that stock seeded in the usual and regular course of the defendant's business, or was it specially seeded for the purpose of the experiment?

A. It was seeded in the regular course of the business and was our No. 1 stock and was seeded in the regular seeding-room, the temperature of which I tested several times each day after coming

back from New York, and found that it ranged between 80° and 84°, and only once found it 84°, and that was in the far corner of the room next to the steam-pipe. This particular seeder from which I took the stock for the experiment was about in the center of the room.

Q. 6. Was the stock perfectly seeded which you used for the experiment?

A. It was.

Q. 7. Do you know at what temperature that fat was melted?

A. Yes, sir; at 150°.

Q. 8. Is that temperature about the average at which you are melting fat in the defendant's business?

A. Yes, sir; for the last 8 months; anywhere from 150° to 160°.

Q. 9. Will you now give us a full description of your next experiment, No. 4?

732 A. We filled another pan at the same time from the same seeder, covered it up in the same manner, and set it beside the other in the chill-room at the same time—there were 82 lbs. of stock in this pan—and at 2 p. m. next day turned pan bottom side up and emptied the stock out, the sides of which showed 68°, and center 76°; sliced it the same as the other, wrapped it — new wrappers, placed it between plates that had been heated to 92° F., started the press and let it run for about an hour without stopping and with the whole pressure on. At the end of that time the belt slipped off the pulley driving the press. We then emptied the press, and we had in the first pail 30 lbs. of good oil; in the second, 22 lbs. of pasty, sticky oil, and 21 lbs. of stearine. The wrappers absorbed 9 lbs.

Q. 10. You speak of using two pails to catch the oil in this experiment; explain this and the reason why you used two pails.

A. The first oil was clear and soft—that is, the oil from the first part of the pressing. As soon as I noticed thick or pasty oil oozing from the wrappers I set another pail under the press and removed the first pail, that I might see how much thick or pasty oil we might get. The scrapings from the plates in this experiment is included in the 22 lbs., as it was too thick to run off the plates.

Q. 11. What was the quality of the 30 lbs. of oil that you caught in the first pail?

A. I could see no difference between it and the 40 lbs. of oil in experiment No. 3, either in appearance or taste.

Q. 12. Were both No. 1 oil?

733 A. Yes, sir. They were put right in our tierces in which we were tiercing No. 1 oil that day.

Q. 13. Except that the stock in experiment No. 4 stood in the chill-room a few hours longer than the stock used in experiment No. 3, and that it was pressed more rapidly and continously than in experiment No. 3, and that the plates were 12° hotter in experiment No. 4 than in experiment No. 3, was there any difference either in the stock itself or in the chilling, slicing, wrapping, or pressing in these two experiments?

A. There was no difference either in the stock or the treatment, other than as stated in the question.

Q. 14. Will you now give us the details of your next experiment, No. 5?

A. Wednesday, October 14th, I melted a kettle of fat from the regular No. 1 fat of that day's melting, at 128° F.—that is, at no time did stock in either melting or settling kettle show more than 128°; placed it in the seeding-room, surrounded with seeders of that day, so that nobody could get at it in any way. On Friday, the 16th, I took 85 lbs. of that stock out of that seeder after it was thoroughly seeded. Stock in seeder after being thoroughly mixed up showed 100° F.; chilled it in the same manner as in experiments No. 3 and No. 4. On the 17th, right after dinner, turned the pan bottom side up and emptied out the stock. The sides of the block showed 74°, the center 80°; sliced and wrapped in new wrappers, as in other two experiments, and placed it between plates heated to 110°. I got 41 lbs. of oil of a good No. 1 quality in the pan; wrappers ab-
734 sorbed 10 lbs.; stearine, 29 lbs.; scrapings from plates, 5 lbs. Scrapings seemed to be mostly chilled oil. The stearine was hard and dry. The press had been stopped several times to give the oil a chance to drain through the wrappers.

Q. 15. Will you now please detail your last experiment, No. 6?

A. Thursday, Oct. 22d, at 8 a. m., I took 82 lbs. of seeded stock from stock that we were pressing that morning in the regular course of our business. Stock in seeder before putting it into the chilling pan showed 88. I surrounded the pan with about 300 lbs. of broken ice, using one of our empty seeders to hold the ice and pan, and at 1 p. m. turned pan bottom side up and emptied out the block of stock. Sides showed 64°; center, 80°; sliced and wrapped, as in the other experiments, and pressed it between plates that had been heated to a uniform temperature of 136°; stopped the press several times during the pressing for from about 5 to 8 minutes each time and got 42 lbs. of good No. 1 oil in pan; 10 lbs. absorbed by wrappers, 27 lbs. of stearine, and 3 lbs. of scrapings from plates. The first oil that flowed from the plates I tested with a thermometer and it showed 84° F.

Q. 16. Exclusive of the stearine and scrapings, I find from your testimony that in experiment No. 3 out of 90 lbs. of stock you got 50 lbs. of good oil, or, in other words, $55\frac{5}{9}$ per cent., while in experiment No. 5 out of 85 lbs. of stock you got 51 lbs. of good oil, equal to 60 per cent., and in your experiment No. 6 out of 82 lbs. of stock you got 52 lbs. of good oil, equal to 63 per cent. Am I correct?

735 A. You are correct.

Q. 17. And, inclusive of scrapings, if we assume them to have consisted entirely of oil, you got $66\frac{2}{3}$ per cent. in experiment No. 3, $65\frac{1}{17}$ per cent. in experiment No. 5, and 67 per cent. in experiment No. 6. Am I correct?

A. I believe you are correct.

Q. 18. Exclusive of scrapings, you got $55\frac{5}{9}$ per cent. of good oil when pressing with plates heated to a temperature of 80° F., 60 per cent. of good oil when pressing with plates heated to a temperature of

110° F., and 63 per cent. of good oil when pressing with plates heated to a temperature of 136° F. Am I correct?

A. You are correct.

Q. 19. Will you explain how you heated the plates, how you tested their temperature in your different experiments, and how soon after testing their temperature in each case you put them into the press and commenced to use them?

A. In each of the experiments the stock was sliced and wrapped ready for pressing before I tested the plates, and after testing the plates were placed in the press just as quick as we could possibly put them in the press.

In experiment No. 3 I took some clean plates that had been stood against the brick wall with small pieces of wood—say half an inch in thickness—placed between wall and first plate and then between each plate. They had stood in the seeding-room several hours in that way, and before using I placed the thermometer—a small, round thermometer—between each plate and the plate next to it
736 and found they stood 80° at all points. That was the general temperature of the room—the seeding-room—at the time of pressing.

In experiments No. 4, No. 5, and No. 6 the plates were placed in an empty seeder with several of our press pins, being about a quarter of an inch in diameter and five to six inches in length, first on the bottom of the seeder and then between each plate and the plate next to it, and cold water was run into the seeder until the plates were entirely covered, and a small steam-pipe put into the water and the water heated 10 to 15 degrees above the temperature of the plates at the time we tested them. The plates were allowed to stand in that water, I should judge, an hour and a half before using. They were then taken out and wiped as quick as possible and tested immediately after wiping by rubbing the bulb of the thermometer all over the surface of the plates, and also testing the water before taking the plates out.

In experiment No. 6 the plates were all wiped off and stood on end, with one of the warm press pins between each plate, and showed in that way 136°, putting the thermometer down between the plates. The water, when it was heated, showed 158°—in this experiment No. 6—and showed about 150° when we took the plates out of it.

Q. 20. Did you use the same press in all these four experiments?

A. I did in three of them—Nos. 4, 5, and 6. I am not certain whether I used that press in experiment No. 3 or not. If I did not, I used the one next to it; they are all alike.

Q. 21. What is their power when run to their full capacity?

737 A. They are registered at 190 tons, but I should judge their capacity is some 40 tons more. That opinion is based on experience I have had with hydraulic presses and the similar character of the stock and stearine pressed in these presses and the hydraulic presses; also from a conversation I had with Mr. Boomer, of the firm of Boomer & Boschert, makers of the presses, that the presses would stand considerable more pressure than the indicator would show.

Q. 22. In these four experiments did you run the presses to their full power and vary only the speed and the continuity of the running?

A. They were all run at one speed, as all our presses are driven off of one shaft, the only difference being that in experiment No. 4 the press ran continuously, while in the other three experiments we stopped them several times.

Q. 23. Describe how hard the blocks of chilled stock were when you emptied them out of the chilling pan in each of your four experiments.

A. They retained their form perfectly, leaving the pan clean, and the sides of the block was quite glossy, and it required quite some pressure of the hand in slicing them. They were middling solid in the interior; the centers were not quite as hard as the outside.

Q. 24. In any of these four experiments was there anything added to or taken from the stock or the products except as you have stated, or anything done or left undone to prevent the tests from being fair and conclusive?

738 A. No, sir; not that I know of, and, further, no one connected with the place—either office or factory—knew that I was going to make these experiments or what seeders I would use or anything about it.

Recess until 2 o'clock p. m.

Cross-examination by C. K. OFFIELD, Esq.:

C. Q. 25. How long did it take that stock, from which you say you made those experiments, to seed—the last 4 experiments?

A. Anywhere from 36 to 48 hours. The fat in the four experiments was melted at different temperatures.

C. Q. 26. How much of the time did you see this stock when you say it was seeding?

A. Two or three times each hour during the day.

C. Q. 27. How many times during the night?

A. I didn't see it all during the night.

C. Q. 28. What was the temperature of the room in which you made these alleged last 4 experiments in pressing?

A. The lowest I found it was 78° F.; most of the time it was from 80° to 82° F., and once I found it as high as 84° in a corner near the steam-pipe.

Throughout this deposition whenever I refer to temperature I mean Fahrenheit.

C. Q. 29. You seem to have testified that the product which flowed from these presses in the four alleged experiments last recited was a good quality of No. 1 oleomargarine oil. Did you ascertain this to your satisfaction by tasting it as it flowed from the presses?

A. I did.

739 C. Q. 30. How long after this product flowed from the presses in each of the four instances was it before you dumped it into the general receptacle of oil for the day?

A. Three of them we dumped in two or three hours afterward; one of them I didn't use at all—that is, the pasty part of it.

C. Q. 31. It took you between three and four hours to press each of these four batches of stock, did it?

A. I should judge about three hours on three of them. One of them I pressed in about an hour. I don't know that I timed only the one press that I saved the oil from—experiment No. 3.

C. Q. 32. How long does it take you to press an ordinary batch of stock in your pressing?

Objected to as immaterial.

A. Usually about two hours.

C. Q. 33. How many pounds is comprised in that batch?

A. About 13 to 15 hundred, according to the stock.

C. Q. 34. Have you any idea how long it would take to press 13 or 15 hundred pounds of chilled stock, the pressing going on between plates at 80°, so as to produce any product of any description?

A. I never pressed over 90 lbs. at one pressing, so I couldn't say.

C. Q. 35. Do you think you could do it in six months, or do you think you could do it at all?

Objected to as entirely immaterial, none of the patents
740 specifying any particular quantity of stock to be pressed at one time nor any particular time for pressing.

A. Probably could do it, if I wanted to, inside of six months. How long it would take I don't know.

C. Q. 36. Has your father given a deposition in this case before?

A. I believe he has in regard to fat rendered at Rafferty & Williams' place, 44th St., New York, but not in regard to chilled stock.

C. Q. 37. He never testified but once, did he, in this case?

Objected to as asking for hearsay. The record shows how often he has testified.

A. Not that I know of; neither did I know that he had testified until after my testimony in regard to the experiment in June, 1885.

C. Q. 38. Were these new cloths that these 4 batches of stock were pressed in?

A. They were brand-new clean cloths that had never been used before.

C. Q. 39. What means did you use to collect the product that you squeezed out of that chilled stock in each of these 4 experiments?

A. The stock was placed on the bottom of the press, the press having been washed out and wiped dry, and either the pan it was chilled in or a pail was used to catch it; sometimes a pail was used, sometimes the pan. It ran right out of the spout of the press into either pail or pan.

741 C. Q. 40. Who authorized you to make the 4 experiments, so called?

A. Mr. Hill, counsel in this case, asked me to make several pressings of chilled stock between warm plates; didn't specify any particular temperature of plates for each experiment or number of ex-

periments, but would like to have some pressed, the plates ranging between 90° and 100° F.

C. Q. 41. You are the same Gilbert A. Peck who recently followed the complainants around and attended upon their examination of witnesses at Chicago, New Haven, and New York, are you not?

A. I went to New York for the purpose of hearing and answering, if necessary, anything they might introduce that would be personally damaging to me in my connection with the Commercial Manufacturing Co. or H. K. Thurber.

C. Q. 42. How did you expect to answer any testimony to that effect by attending complainants' examination?

Objected to as immaterial and irrelevant and as a matter that belongs to the witness' personal business entirely.

A. I can't tell how I would answer it until I knew how it was.

C. Q. 43. At what temperature did you settle the *metteled* fat at in each of those four experiments?

A. No. 3 and 4 at 150° F., No. 5 at 128° F., No. 6 at 160° F.

G. A. PECK.

742 Subscribed and sworn to before me this 30th day of October, A. D. 1885.

EDWIN L. THURSTON,
Notary Public.

STATE OF ILLINOIS, } ss:
County of Cook, }

I, Edwin L. Thurston, a notary public in and for the county of Cook, in the State aforesaid, do hereby certify that the foregoing deposition of Gilbert A. Peck was taken before me at the time and place therein specified, pursuant to notice hereto attached; by consent of counsel made a part of this record; that the parties to the said cause were present at the taking of the same—complainants by their counsel, Charles K. Offield, Esq., and defendant by its counsel, Lysander Hill, Esq., as therein appears; that before deposing the said Gilbert A. Peck was by me first duly sworn to tell the truth, the whole truth, and nothing but the truth in the cause now pending in the United States circuit court for the northern district of Illinois, wherein The Commercial Manufacturing Co., Consolidated, *et al.* are complainants and Fairbank Canning Company is defendant; that said deposition was reduced to writing from said witness' statement and the same duly subscribed and sworn to by him, as therein appears.

743 And I do further certify that I am neither attorney nor of counsel for any of the parties in said deposition or caption named and am in nowise interested in the result of said cause.

In testimony whereof I have hereunto set my hand and notarial seal this 30th day of October, A. D. 1885.

[SEAL.] EDWIN L. THURSTON,
Notary Public.

744 NORTHERN DISTRICT OF ILLINOIS, *ss:*

I, William H. Bradley, clerk of the circuit court of the United States for said district, do hereby certify the above and foregoing to be a true and correct transcript of the record of all the proceedings had in said court in the cause wherein The Commercial Manufacturing Company, consolidated, and The National Dairy Company are the complainants and The Fairbank Canning Company is the defendant, as the same appear from the records and files of said court now remaining in my custody and control.

Seal of Circuit Court U.S., Northern Dist. Illinois, 1855.

In testimony whereof I have hereunto set my hand and affixed the seal of said court, at my office, in Chicago, in said district, this thirteenth day of October, 1886.

WM. H. BRADLEY, *Clerk.*

Endorsed on cover: N. Illinois C. C. U. S. No. 253. The Commercial Manufacturing Company, consolidated, and The National Dairy Company, appellants, *vs.* The Fairbank Canning Company. Filed October 26, 1886.

a THE UNITED STATES OF AMERICA:

Seal of the Supreme Court of the United States.

The President of the United States to the judges of the circuit court of the United States for the northern district of Illinois, Greeting:

Whereas in a certain suit in said circuit court between The Commercial Manufacturing Company (Consolidated) and The National Dairy Company, complainants, and The Fairbank Canning Company, defendants, which suit was removed to the Supreme Court of the United States by virtue of an appeal, agreeably to the act of Congress in such case made and provided, a diminution of the record and proceedings in said cause has been suggested, to wit:

"That a copy of the United States letters patent granted to Alfred Paraf, April 8, 1873, No. 137,564, used in evidence in said cause and forming a part of the record in said court, namely, the United States circuit court for the northern district of Illinois, is omitted from said transcript."

You, therefore, are hereby commanded that, searching the record and proceedings in said cause, you certify what omissions, to the extent above enumerated, you shall find to the said Supreme Court of the United States, so that you have the same, together with this writ, before the said Supreme Court forthwith.

Witness the Honorable Melville W. Fuller, Chief Justice of the Supreme Court of the United States, the 6th day of December, A. D. 1889.

JAMES H. McKENNEY,
Clerk of the Supreme Court of the United States.

b The execution of this writ of certiorari appears in the certified transcript hereto attached, pages from one to eight, inclusive, which, together with the writ, is herewith transmitted to the Supreme Court of the United States.

Chicago, January 23, 1890.

WM. H. BRADLEY,
Clerk of the Circuit Court of the United States for the Northern District of Illinois.

[Endorsed:] 18235. U. S. circuit court, N. dist. Ill. Commercial M'f'g Co. *v.* Fairbank Canning Co. Writ of certiorari. Filed Dec. 20, 1889. Wm. H. Bradley, clerk.

1 United States Circuit Court, Northern District of Illinois.

MONDAY, *December* 23, 1889.

Present: Hon. Henry W. Blodgett, district judge.

COMMERCIAL MANUFACTURING COMPANY
vs.
FAIRBANK CANNING COMPANY. } In Chancery.

Now come the parties, by their solicitors, and the complainant's motion to amend the transcript of record herein, which was pre-

pared and filed in the Supreme Court of the United States, comes on to be heard, and, after hearing the arguments of counsel, the court takes the same under advisement.

2 United States Circuit Court, Northern District of Illinois.

MONDAY, *December* 30, 1889.

Present: Hon. Henry W. Blodgett, district judge.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, and THE NATIONAL DAIRY COMPANY
vs.
THE FAIRBANK CANNING COMPANY.
} In Chancery.

Now comes the said defendant, by Mr. Hill, its solicitor, and the complainant, by Mr. Offield, its solicitor, and it appearing that on the hearing of said case the patent No. 137,564, granted by the United States on the 8th day of April, 1873, to Alfred Paraf, assignee to the Oleomargarine Manufacturing Company, for an "improvement in purifying and separating fats," was duly introduced in evidence by and on behalf of the defendant, and that a copy of said patent was duly filed as an exhibit in said cause, and that the same has been lost or mislaid from the files of this court in said cause, and the said defendant, by its said solicitor, now producing in court a duly certified copy of said patent, it is, on motion of defendant's said solicitor, ordered that said certified copy be marked by the clerk filed as of the day of the hearing of said cause, and marked as an exhibit in said cause, and that a copy of said exhibit be duly certified to the Supreme Court as a part of the record in said cause.

3 (2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted the Oleomargarine Manufacturing Company April 8, 1873, number 137,564, for improvement in purifying and separating fats.

[SEAL.] In testimony whereof I, C. E. Mitchell, Commissioner of Patents, have caused the seal of the Patent Office to be affixed this 7th day of December, in the year of our Lord one thousand eight hundred and eighty-nine, and of the Independence of the United States the one hundred and fourteenth.

C. E. MITCHELL,
Commissioner.

4 (2–155.)

No. 137,564.

United States of America to all to whom these presents shall come:

Whereas Alfred Paraf, of New York, New York, has presented to the

Commissioner of Patents a petition praying for the grant of letters patent for an alleged new and useful improvement in purifying and separating fats, he having assigned his right, title, and interest in said improvement to the Oleomargarine Manufacturing Company, a description of which invention is contained in the specification, of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such case made and provided; and whereas, upon due examination made, the said claimant is adjudged to be justly entitled to a patent under the law:

Now, therefore, these letters patent are to grant unto the said Oleomargarine Manufacturing Company, its successors or assigns, for the term of seventeen years from the eighth day of April, one thousand eight hundred and seventy-three, the exclusive right to make, use, and vend the said invention throughout the United States and the Territories thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the city of Washington, this eighth day of April, in the year of our Lord one thousand eight hundred and seventy-three, and of the Independence of the United States of America the ninety-seventh.

[SEAL.]

B. R. COWEN,
Secretary of the Interior.

Countersigned:
M. D. LEGGETT,
Commissioner of Patents.

(4491—5,000.)

5

UNITED STATES PATENT OFFICE.

ALFRER PARAF, of New York, N. Y., assignor to the Oleomargarine Manufacturing Company.

Improvement in Purifying and Separating Fats.

Specification forming part of Letters Patent No. 137,564, dated April 8, 1873; application filed February 11, 1873.

To all whom it may concern:

Be it known that I, Alred Paraf, now residing in the city, county, and State of New York, have made an invention or discovery of new and useful improvements for the manufacture of products from fresh animal fat, and that the following is a full, clear, and exact description and specification of my invention:

It is physiologically and chemically known that the fresh fat of animals is mainly composed of oleomargarine, stearine, and membrane. In the manufacture of tallow the whole mass is heated up to a high temperature, hence its peculiar odor. I found that if the mass is heated at a temperature not surpassing 120° Fahrenheit for about two hours the whole of it will melt the same as at a high temperature and remain perfectly odorless.

The nutritive property of animal fat is most entirely owing to the oleomargarine it contains, the stearine being constantly oxidized by pulmonary respiration. It appeared to me, therefore, of the greatest importance to separate from fresh fat all its nutritive parts, at the same time keeping it odorless, in order to use the same for domestic cooking, perfumery, and medical purposes, as well as the raw material for the manufacture of useful articles from it.

The first part of the operation consists in taking the fresh fat and hashing it as fine as possible in a regular meat-hasher; then
6 to introduce it with its own weight of water in a wooden tank able to be heated by means of a steam-pipe. The whole mass is heated at a temperature varying from 100° to 120° Fahrenheit, and stirring it constantly. After two hours all the stearine and oleomargarine will be separated from the membrane or scraps.

The whole mass is allowed to cool. The mixture of congealed oleomargarine, stearine, and membrane is separated from the water, which is thrown away, and worked thoroughly, with two per cent. of common salt, between two cylinders. This has for its object to extract most of the water from the fatty mass. It is then introduced in cotton or cotton flannel bags, which are either introduced in a hand press, cider press, or hydraulic press or in a hydro-extractor similar to those used in sugar refineries for the purpose of separating the sirup from the crystallized sugar. Either of the above-named operations must functionate in rooms all the time heated at a temperature of 50° to 60° Fahrenheit, which is the melting point of the oleomargarine, but which has no effect on the stearine or membrane.

Therefore at this temperature and by the means of either of the above-named mechanical preparations the melted oleomargarine is separated from the solid stearine and membrane, and after being congealed, worked again between two cylinders with two per cent. of salt to separate the last trace of water, composes a substance highly suited for domestic and cooking purposes; also the best base for pomatums and perfumery articles, as well as salves for medicinal purposes.

Having thus fully described my invention and the manner in which the same is or may be carried into effect, what I claim and desire to secure by letters patent is—

7 The process or processes for the improvements in the manufacture of products from fresh fat substantially as hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 8th day of February, A. D. 1873.

ALFRED PARAF.

Witnesses:
FRANCOIS LOEFFEL.
GEO. IRVING BANKS.

(Endorsed:) Filed Jan'y 12, 1886. Wm. H. Bradley, clerk.

8 NORTHERN DISTRICT OF ILLINOIS, *ss:*

I, William H. Bradley, clerk of the circuit court of the United States for said northern district of Illinois, do hereby certify the above and foregoing to be true and complete copies of the orders entered of record on December twenty-third, 1889, and December thirtieth, 1889, and of the letters patent granted by the United States of America on April eighth, 1873, to Alfred Paraf and filed January twelfth, 1886, in said court, all in the cause wherein The Commercial Manufacturing Company, Consolidated, and The National Dairy Company are complainants and The Fairbank Canning Company is defendant, as the same appear from the records and files of said court now remaining in my custody and control.

Seal of Circuit Court U. S., Northern Dist. Illinois, 1855.

In testimony whereof I have hereunto set my hand and affixed the seal of said court, at my office, in Chicago, in said district, northern division, this twenty-third day of January, 1890.

WM. H. BRADLEY, *Clerk.*

9 [Endorsed:] Supreme Court U. S. 1889, Oct. term. No. 253. The Commercial Manufacturing Co. *et al.*, app'ts, *vs.* The Fairbank Canning Co. Writ of certiorari and return. Filed Jan'y 28, 1890.

Supreme Court of the United States.

OCTOBER TERM, 1889.

No. 253.

THE COMMERCIAL MFG. CO., CONSOLIDATED, et al., Appellants,

vs.

FAIRBANK CANNING CO., Appellee.

MOTION.

L. HILL,
Counsel for Appellee.

OFFIELD & THURSTON,
Counsel for Appellants.

LAW REPORTER PRINT, 503 E ST.

Supreme Court of the United States.

OCTOBER TERM, 1889.

THE COMMERCIAL MFG. CO., CONSOLIDATED, *et al., Appellants,*
vs.
FAIRBANK CANNING CO., *Appellee.*
} No. 253.

To the Appellants:

Notice is hereby given that on Thursday, December 5, 1889, before the Supreme Court of the United States, at the opening of said Court, or as soon thereafter as counsel can be heard, the motion and affidavit of which copies are herewith served, will be presented to said Court, and the order in said motion referred to will be prayed to be entered in said cause.

L. HILL,
Counsel for Appellee.

Copy received.
Nov. 30, 1889.
OFFIELD & TOOLE.

UNITED STATES SUPREME COURT.

OCTOBER TERM, 1889.

THE COMMERCIAL MFG. CO., *et al.*, *Appellant*,
vs.
FAIRBANK CANNING CO., *Appellee*. } No. 253.

AFFIDAVIT.

Lysander Hill, of Chicago, Ill., having been duly sworn, deposes and says:

During the cross-examination of Charles F. Chandler, one of appellant's witnesses, the patent of Alfred Paraf, dated April 8, 1873, No. 137,564, was put in evidence by appellee's counsel, and became part of the record of the cause, as will duly appear by reference to folio 258, p. 173, of the printed record of this court; that when appellee printed its evidence it did not print said patent for the reason that it supposed that the same would be printed by complainants with their printed testimony; that when complainants (appellants) afterwards printed their record they left out the said Paraf patent for the reason, as their counsel alleged, that they regarded it as one of defendant's (appellee's) exhibits; that when appellee discovered the fact that said exhibit was not printed in the record it was too late to add it thereto, and appellee's counsel therefore printed it as an addendum to their brief used in the court below; that at the hearing in the court below said exhibit was present as a part ot the record of the case, having been duly filed therein, and was referred to repeatedly in argument, both by counsel for complainant and counsel for defendant; that in the transcript of the record certified by the clerk of the court below to this court, said exhibit was omitted; that appellee's counsel did not receive a printed

copy of said transcript from the clerk of this court till about a week ago, and did not know of such omission till said printed copy was received and examined; that he then made inquiry at the clerk's office in the court below, for said exhibit, and was informed that it had disappeared from the court's files and could not be found; and that he then applied to appellant's counsel, Messrs. Offield and Thurston, to stipulate that a copy of such patent might be used in this court with the same force and effect as if it had been duly certified here with the transcript of the record, but they refused to enter into such stipulation.

Affiant, who is of counsel for appellee, further says, that he regards said patent as important to the hearing of this cause, and material to the case, because it shows that more than eight months before the patent of Mige, which is sued on, was granted, and about seven months before it was applied for, said Paraf had patented in this country a process for manufacturing oleomargarine by hashing fresh animal fats, rendering the hashed fat at a temperature varying from 100° F. to 120° F., crystallizing the oils to separate them from the scraps, and pressing out the oleomargarine to separate it from the stearine and membrane—the fats being hashed "as fine as possible in a regular meat hasher," and the fats being melted and treated at so low a temperature as to cause them to "remain perfectly odorless," and that the state of the art at the date of said Mige's application in this country, as shown by the record below, will not be fully before this Court unless said Paraf patent be considered.

LYSANDER HILL.

Subscribed and sworn to before me this 30th day of November, A. D. 1889.

HARRY BITNER,
Notary Public.

[SEAL]

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1889.

THE COMMERCIAL MFG. CO., CONSOLIDATED, *et al., Appellants.*
vs.
FAIRBANK CANNING CO., *Appellee.*
} No. 253.

MOTION.

Now comes the appellee by its counsel and moves the Court for an order that the United States letters patent granted to Alfred Paraf on the 8th day of April, 1873, No. 137,564, for improvements for the manufacture of products from fresh animal fat, be considered as a part of the record in this cause in this Court; and that appellee have leave to file here twenty-five copies of the specification of said patent as printed by the Government for the Patent Office, the same, when filed, to be taken to be a part of the printed record of the case; and that the costs of said copies and of this motion and the proceedings thereon, be taxed to the appellants.

L. HILL,
Counsel for Appellee.

FILED
MAR 10 1890

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, A. D. 1889.

No. 253.

THE COMMERCIAL MANUFACTURING COMPANY CONSOLIDATED, AND THE NATIONAL DAIRY COMPANY,
Appellants,
vs.
THE FAIRBANK CANNING COMPANY,
Appellee.

In Equity.

Appeal from Circuit Court of the United States for the Northern District of Illinois.

BRIEF FOR APPELLANTS

BY

C. K. OFFIELD.

BARNARD & GUNTHORP LAW PRINTERS, CHICAGO.

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IN THE

Supreme Court of the United States.

OCTOBER TERM, A. D. 1889.

No. 253.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, AND THE NATIONAL DAIRY COMPANY, *Appellants*,

vs.

THE FAIRBANK CANNING COMPANY, *Appellee*.

In Equity.

Appeal from Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF CASE.

This suit was brought in the court below by the above named corporation complainants, joint owners as assignees and exclusive licensees of the letters patent in suit, against the defendant, the Fairbank Canning Co., an Illinois corporation, as manufacturers, practicing the invention contended for and selling the product thereof. The bill charges infringement of re-issued letters patent granted one of the corporation complainants, The Commercial Manufacturing Company, Consolidated, as assignee of Hippolyte Mege, under date of June 13, 1882, No. 10,137, the original thereof having been granted December 30, 1873. The bill prays for an accounting and an injunction. The

defendants filed their answer in due course of time and the complainants their replication. Extended testimony was then taken covering a considerable period of time, and the case was thereafter heard upon its merits before Judges Gresham and Blodgett, on the 15th day of January, 1885, an opinion being rendered by these named judges March 22, 1886, as appearing in printed record, page 26. The court found an equity in favor of the defendant and dismissed the bill. Upon that finding this appeal is now taken.

The Parties.

The Commercial Manufacturing Company, Consolidated, either by itself or through its predecessors, instigated and introduced the manufacture in this country of the product of the patent in suit, viz: that product which now passes commercially under the name of oleomargarine, and which hereafter for brevity will be so termed. The joint appellant or co-complainant, The National Dairy Company, is the exclusive licensee by purchase and a continuing royalty of the invention of said patent for the State of Illinois, having invested something over $200,000 by virtue alone of the invention of this patent. Both of said corporation appellants at the date of the filing of the bill of complaint herein were extensive manufacturers of the product of the patent, having large sums of money invested in real estate, machinery and buildings, etc., for the production of the same. The defendant is an extensive competing manufacturer in the State of Illinois, manufacturing without license or patent.

Asserted Error.

The court below dismissed appellant's bill upon this ground alone, namely: "That the complainant's patent "expired April, 1876, by the expiration of the Bavarian "and Austrian patents." (Rec., 36.)

We most respectfully contend that the court manifestly erred in such finding, and ask for a reversal of the decree of the court below finding by reason of such error, based upon a review of the record.

The Hippolyte Mege Discovery and its History.

Briefly, antecedent to the year 1869 there lived in Paris one Hippolyte Mege, a native of France and a chemist manufacturer of very considerable distinction and standing; he being something of a philanthropist and interested in projects to ameliorate the condition of the poor, and especially to give them better food sustenance; the then empress of France assigning to him a farm with a large dairy adjacent as an aid to his experiments. In prosecuting his experiments in this direction, Mege conceived the idea and discovered the fact that the fat of cattle was, when stripped of certain of its ingredients and component parts, analogous to the butter product of the cow, and could easily be substituted therefor as a food product, and under certain conditions of treatment could be so transformed as to be accepted by all classes of consumers as such butter product. This was the general discovery made by Mr. Mege and announced by him to the world and claimed by himself and his friends in his behalf.

Mege at once after making this discovery proceeded to patent generally and in a crude manner such discovery in

various foreign countries, namely: France, England, Austria, and Bavaria, as such country was then a separate entity acting under individual patent laws.

THE INVENTION OF THE MEGE AMERICAN PATENT.

In November, 1873, Mege filed in the patent office at Washington an application for letters patent for the invention in suit, and on the 30th day of December, 1873, the patent was issued precisely identical with that application.

The record discloses the fact that between the date of grant of the original patent, December 30, 1873, and the date of grant of the re-issued patent in suit, June 13, 1882, several re-issued patents were intermediately taken out. But this last re-issue is simply a retaking of the original patent identically as to specifications and claims, rendered necessary by the decision of this court in the case of *Miller* v. *Bridgeport Brass Company;* all questions, therefore, as to the validity of the patent in suit as founded upon such re-issue would seem to be closed.

Gage v. *Herring*, 107 U. S., 640.

It is asserted and earnestly contended for on the part of the complainants, that the invention of the American patent is clear and well defined, and consists in an *improved means* of making commercially practical and successful the practicing of the original invention or discovery of Mege.

No clearer conception can be obtained of the American invention than by here quoting that portion of the Mege patent which refers wholly to such invention and the two claims thereof, which express the invention in final form. The clauses stating the invention of the Mege

American Patent, after the preamble thereof, also quoted, are five in number, namely: (Rec., 8.)

"Be it known that Hippolyte Mege, of Paris, France, "now deceased, chemist manufacturer, did invent an im- "proved means for transforming animal fat into butter, of "which the following is a specification:

"This invention, which is the result of physiological "investigations, consists of artificially producing the nat- "ural work which is performed by the cow when it re- "absorbs its fat in order to transform the same into but- "ter. The improved means he employed for this purpose "are as follows:

"1. Neutralization of the ferments. In order to pre- "vent the greasy substance which is settled in the tissue "of the animals from taking the disagreeable taste of the "fat, it is necessary that the ferments, which produce this "taste, shall be completely neutralized. For this effect, "as soon as possible after the death of the animal, he "plunged the raw fats, called '*graisses en branches*,' into "water containing fifteen per cent. of sea-salt and one per "cent. of sulphide of soda. He began thus the transfor- "mation an hour, at least, after the immersion, and "twelve hours, at most, afterwards.

"2. Crushing. A complete crushing is necessary in "order to obtain rapid work without alteration. For this "purpose, when the substance is coarsely crushed, he let "it fall from the cylinders under mill-stones, which com- "pletely bruised all the cells.

"3. Concentrated digestion. The crushed fat falls "into a vessel which is made of well-tinned iron, or enam- "eled iron, or baked clay. This vessel must be plunged "in a water bath of which the temperature is raised at "will. When the fat has descended in the vessel, he

"melted it by means of an artificial digestion, so that the "heat does not exceed 103° Fahrenheit, and thus no taste "of fat is produced. For this purpose he threw into the "wash-tub, containing the artificial gastric juice, about two "liters per hundred kilograms of greasy substance. This "gastric juice is made with the half of a stomach of a pig "or sheep, well washed, and three liters of water con- "taining thirty grams of biphosphate of lime. After a "maceration during three hours, he passed the substance "through a fine sieve and obtained the two liters which "are necessary for a hundred kilograms. He slowly "raised the temperature to about 103° Fahrenheit, so that "the matter shall completely separate. This greasy mat- "ter must not have any taste of fat. It must, on the con- "trary, have the taste of molten butter. When the liquid "does not present any more lumps, he threw into the said "liquid one kilogram of sea-salt (reduced to powder), per "hundred kilograms of greasy matter. He stirred during a "quarter of an hour and let it set until obtaining perfect lim- "pidness. This method of extracting has a considerable ad- "vantage over that which has been previously essayed. "The separation is well made and the organized tissues "which do deposit are not altered.

"4. Crystallization in a mass. In order to separate "the oleomargarine of the stearine, separated crystallizers "or crystallizations at unequal temperatures have been "already employed. He contrived for this purpose the "following method, which produces a very perfect "separation, and is as follows: He rendered the molten "fat in a vessel, which must be sufficient for containing "it. This vessel is placed in a wash-tub of strong wood, "which serves as a water bath. In this wash-tub he put "water at the fixed temperature of 86° Fahrenheit for

"the soft fats proceeding from the slaughter-houses, and "98° for the harder fats, such as mutton fat. Afterward "the wash-tubs are covered, and after a certain time, more "or less long according to the fats, the stearine is depos- "ited in the form of teats in the middle of the oleomar- "garic liquid.

"5. Separation by centrifugal force. In order to avoid "the numerous inconveniences of the employment of the "presses which have been hitherto used, he caused the "mixture of stearine and oeleomargarine to flow into a "centrifugal machine called 'hydro-extractor.' The "greasy liquid passes through the cloth, and the stearine "is collected. When all the liquid is passed, he put the "machine in motion, and the crystals of stearine are en- "tirely exhausted without the auxiliary of the presses. "However, during certain seasons there are animals "which produce crystals of stearine soft enough for ren- "dering necessary the stroke of a press as a last opera- "tion; but in this case this operation has little importance, "because it is applied only to a fraction of the product. "In all cases the oleomargarine is separated from the "stearine when it is cold and passed to the cylinder, con- "stituting, especially if its yellow color has been raised, a "greasy matter of very good taste, and which may re- "place the butter in the kitchen, where it is employed "under the name of 'margerine,' but if it is desired to "transform it into more perfect butter, he employed the "following means." * * *

The remainder of the patent, being the sixth, seventh, eighth and ninth clauses, relates solely to supplemental steps to be employed at will, under certain circumstances and for certain purposes in the treatment of the product produced by the employment of the first five steps, and

is not referred to for the reason of not being involved in this case.

The two claims of the patent are as follows:

"1. The improved material herein described, pro-"duced by treating animal fats, so as to remove the tis-"sues, and other portions named, with or without the ad-"dition of substances to change the flavor, consistency or "color as set forth.

"2. The process herein described of treating animal "fats in the production of oleomargarine." (Rec., 10.)

Before entering into a detailed discussion of this record and the testimony bearing upon the question of the correctness of the finding of the court below as to the asserted error, we shall present briefly to the court two or three questions made certain in this record relating to this oleomargarine product, which were highly important at the time of the beginning of the present suit in question, but which may be now matters of common knowledge and recognition by the public and this court, and if so, and so indicated, will not need discussion. We assert:

1. Oleomargarine is now firmly established and universally recognized and adopted as a separate industry, and is recognized as a commercial article of great and incalculable value.

2. Oleomargarine is chemically pure as a product for human food.

3. Oleomargarine is a wholesome and palatable article of human food, and has marked advantages as an article of commerce in this respect over ordinary dairy butter.

4. Oleomargarine is a distinct food product from dairy butter.

I. OLEOMARGARINE, ITS RAPID AND VAST GROWTH AS AN INDUSTRY.

Prior to the issuing of the Mege American Patent in suit, there had not been a pound of oleomargarine manufactured commercially in this country, although the theoretical discovery or invention had been known world-wide since the date of its disclosure in 1869, in France, but almost immediately upon the issue of the American Patent in suit, the manufacture of the product thereof was begun in this country by the predecessors and assignors of these complainants, and therefrom has grown into vast proportions.

It is common knowledge and so identified by proof in this record that, prior to the invention of the Mege American Patent, absolutely the only use in this country that was made of the fat of beeves was its transformation into tallow and to a small extent its conversion into certain soaps, ointments, liniments and perfumes.

Simply as illustrating in practical form to the court a fact which is perhaps now common knowledge, there was put into this case the depositions of various parties engaged in the most extensive manner in the handling of fats and butter products in this country for very many years antecedent to the date of the patent in suit.

JOHN ANDERSON, wholesale dealer in New York City, for a quarter of a century in "provisions, dairy products butter, cheese aud oleomargarine," and one of the largest exporters of oleomargarine in the United States, testified that his trade increased between the year 1876 and the year 1883, when his deposition was given, in the sale of oleomargarine from 1,500 tubs of that product per year to

50,000 tubs, the tubs varying in value from $3.50 to $5 per tub with an average weight of thirty-five pounds per tub. (Rec., 85.)

WASHINGTON WINDSOR has been in he business of handling dairy products in the city of New York since 1859. Was three times president of Mercantile Exchange of New York, the largest organization of that kind in the world, and at the time of the giving of his deposition was president of the society for the prevention of the adulteration of butter in New York state. Mr. Windsor had handled oleomargarine for a number of years prior to the giving of his deposition, and testified to its rapid growth and the absolute demand for the product as an industry in the market, and that oleomargarine then, at the date of the deposition, had ranked in the same call upon the produce exchange as other food products. (Rec., 89.)

MR. EDWARD G. BYRNES, the largest dealer of his particular class in New York City, *i. e.*, retail dealer of groceries, with a business amounting to nearly a half million dollars per year, the larger portion of the same being the sale of butter, testified to the rapid growth of his trade in oleomargarine from "zero to about 150 tubs per week," three-fourths of the sale being oleomargarine, with full knowledge and free selection of his customers in the choice of that product. Mr. Byrnes testified that the manufacture of oleomargarine had driven the common grades of dairy butter out of the business, as they would not sell. (Rec., 79.)

GEORGE B. DOUGLAS, the president of the Inter-National Dairy Fair Association, and a dealer in butter products for thirty years in the United States and Canada, testified to the rapid growth of the trade in oleomargarine

and its wholesomeness over the common grades of dairy butter produced. (Rec., 72.)

Very frequently the great value of an article can be impressed and enforced upon the mind by comparison and illustration.

PROF. CHARLES F. CHANDLER, late president of the Board of Health in New York City, and familiar with the invention of the Mege patent since its introduction in this country in 1874, shortly thereafter in his official position investigated the value of the beef product and the slaughtering of beeves as applied and confined to New York City alone, the incentive being an attempt to drive that industry out of such city. The Professor again states as follows: "I found at that time that the value of all that product "of these establishments exceeded that of the entire "anthracite product of the United States, that it exceeded "the entire petroleum product of the United States, and "that it about equaled in value all the gold and silver "product of the entire country." (Rec., 158.)

It is in evidence here, and not disputed, and will be admitted to be much increased at this date; to the effect that the fat of each individual beef by reason of its capability of being transformed into oleomargarine, instead of its former uses, is worth in the market to-day at least $2 more than prior to the Mege patent. Now take for example the city of Chicago alone, the statistics showed, at the date of the trial below, that at the stock yards in said city there is received on an average each day 6,351 head of beef cattle, which with a loss of but a slight per cent. are slaughtered at that point. This would add to the value of that industry alone in Chicago daily the sum of $12,703, or an added value to the beef product at that single point of nearly $4,000,000 yearly.

It must be remembered that this trade, growth and acceptance of oleomargarine was and is solely by virtue of the intrinsic merits of the article itself. For a number of years it was a despised product in the eyes of the great mass of the people, legislators and courts. Rigid enactments were passed by many of the states ostensibly to regulate its production, but in reality to work its extinction.

The great State of New York passed a law absolutely prohibiting its production, which was declared unconstitutional,

99 N. Y. Rep., 337,

as were the most of the laws of the different states following in this line.

His Honor, Mr. Justice Miller, will remember that several years ago, he decided adversely to a *habeas corpus* petition of a Missouri citizen, filed to release such citizen from fine and imprisonment, decreed against him by a Missouri court upon the sole ground that he had in his possession, and for sale this product made under the Mege patent.

In re John Brosnahan, Jr., 4 McCrary, 1.

In view of the above facts we will rest confident that it is now well determined that oleomargarine is as much an established factor among the products and industries of the food consumption of markets of this country, as any other food product; and has obtained that position entirely by virtue of the good qualities and personality of the article.

The remaining questions to be discussed in this record, as we shall contend, lie within the domain and conclusion, of science, and can only be determined by witnesses peculiarly qualified to study and pass upon such questions.

And we will here make known to the court, that body of scientists who appear as witnesses in this case and upon whose testimony we shall rely as proving conclusively the facts which they assert and testify concerning.

The scientific witnesses called by complainant were four in number.

Prof. Henry Morton, president of Stephens institute of technology, and admittedly one of the most learned and upright chemists and scientists of this day.

Prof. Charles F. Chandler, of the city of New York, for many years president of the board of health of that city, a chemist and an author of wide celebrity and of great practical experience in the particular industry to which the Mage patent relates, by reason of his various positions held and his study of a great variety of food products.

Prof. R. H. Chittenden, occupying the chair of physiological chemistry of Yale College, and one of the most honest and learned members of his profession.

Prof. C. Gilbert Wheeler, of Chicago, a well known chemist in the West, and an author and an authority of recognized standing and abliity in his own country.

All of the above witnesses have personally qualified themselves by frequent experiments and close watching of the practical production of oleomargarine, in confirmation of their statements and conclusions given under their respective oaths.

2. OLEOMARGARINE IS CHEMICALLY PURE AS APRODUCT FOR HUMAN FOOD.

The record in this case as evidenced by all of complainant's witnesses, qualified scientists, is to the end and effect that oleomargarine as produced by the first five steps of the Mege patent is chemically pure.

Professor Chandler identifies this fact as follows: "The oleomargarine or the butter product which results "from the applications of the processes described in the "first five sections consists of oleomargarine (or palma-"tine) and some stearine. It is a pure fat." (Rec., 155.)

Professor Morton states in detail and descriptive analysis the purity of oleomargarine as a food product. (Rec., 102.)

As does Professors Wheeler and Chittenden on pages 274–296 respectively, of the record.

As this testimony is not contradicted, and as it must follow from the other questions that are to be discussed that oleomargarine is chemically pure, if the butter product of the cow is also pure, we will now pass to the third assertion, viz:

3. OLEOMARGARINE IS A WHOLESOME AND PALATABLE ARTICLE OF HUMAN FOOD AND HAS MARKED ADVANTAGES AS AN ARTICLE OF COMMERCE IN THIS RESPECT OVER ORDINARY DAIRY BUTTER.

The witnesses called by the complainant to substantiate the above assertions were both scientists and practical men.

Prof. Morton states the facts as follows:

"As regards wholesomeness I do not think there "would be any difference between the Mege product in "either of its conditions, and ordinary good dairy butter, "though the Mege product would be the better in this "respect than a strong or rancid quality of dairy butter. "The same remark applies to the nutritiousness of the "materials compared, while as regards palatableness the "Mege product would, I think, hold an intermediate "place between the highest and the lower grades to "dairy butter, being better than the low grades, and not "quite equal to the highest in this respect." (Rec., 102.)

Prof. Chandler in reply to a question as to what preference exists as a matter of hygiene between oleomargarine and ordinary dairy butter, replied as follows:

"I should give the preference decidedly to the oleomar-"garine as a question of hygiene, that is to say, it is a "much purer and more cleanly product than the average "product of the dairy." (Rec., 156.)

Professors Wheeler and Chittenden also testify in detail as to the superiority of oleomargarine over the ordinary butter sold in the markets of the country, giving their reason therefor. (Rec., 274–296.)

Among the practical witnesses testifying to the wholesomeness and the advantages of oleomargarine over ordinary daily butter, are Mr. Edward G. Byrnes, the largest butter dealer in New York City, who states, "I know "the trade like it (oleomargarine) better, it is sweeter "and it keeps better, and does not become rancid, as the "poorer grades of butter will, when exposed to the air. "* * * It has had the tendency of compelling the "manufacturers of butter to make it better, as the com-"mon grades do not sell." (Rec., 80.)

Mr. George B. Douglas testified: "I believe it (oleo-"margarine) to be wholesome as butter, and much more "so than a large portion of the butter produced." (Rec., 74.)

Mr. John Anderson's deposition is to the effect that oleomargarine is a wholesome, palatable and nutritious article of human food, and is so considered by the trade; gives his reason for the driving of the ordinary butter out of the market by oleomargarine in these words: "Well, one reason is that the low price at which it can be "sold as compared with butter at the same price; oleo-"margarine being sweet, clean and palatable, while butter "selling at the same price will be stale, old and unpalat-"able." (Rec., 84.)

Mr. Charles H. Johnson states: "I think it (oleomar-"garine) is more healthful than the common grades of "butter, whose place it now supplies to a great extent." (Rec., 88.)

Mr. Washington Windsor puts the proposition as follows: "I have no knowledge that it has ever been an in-"jurious article of food. I believe it has been of benefit "to the laboring classes, because it has tended to keep "the price of natural butter lower." (Rec., 93.)

All of the above witnesses, scientists and laymen are the representative men respectively of their professions and trades, with a full knowledge of the subject-matter of their testimony, and as such testimony is uncontradicted and unassailable, it would appear to make certain the fact contended for, to wit: that the product of the Mege patent is wholesome, nutritious and palatable as a food article, and superior to all ordinary grades of dairy butter.

4. OLEOMARGARINE IS A DISTINCT FOOD PRODUCT FROM DAIRY BUTTER.

While oleomargarine greatly resembles butter and is undistinguishable therefrom by the ordinary purchaser and consumer, still it is a new product in itself, having marked characteristics recognizable by the chemist and the connoisseur upon investigation, which characteristics render it a distinct and separate product, these characteristics are so subtle that it requires the knowledge and skill of the chemist to state them understandingly and make them clear. Prof. Morton upon this point testified as follows: "The Mege product, however, differs from "dairy butter, in the first place, as to its composition, by "reason of the presence in the dairy butter of several sub- "stances not found in the Mege product. Thus the dairy "butter contains about five per cent. to six per cent. of "the peculiar fat known as butyrine; it also contains a "smaller amount of casein, some trace of albumen, also "extremely minute quantities of caprilin, caproilin and cap- "rylin. None of these substances would be present in "the Mege product as above referred to, which would "therefore lack the peculiar flavor due to the presence of "these products. The amount of water and salt would "also, as a rule, be greater in dairy butter than in the "Mege products. There would also be a difference in "consistency, inasmuch as the dairy butter would not con- "stitute a homogeneous mass of fatty substance, but "would be a solid emulsion of such fatty substance in "which the same existed as minute spheroids or particles "of the said fatty substance, separated from each other "by an aqueous fluid consisting of water, holding in "solution salt and traces of albumen and casein." (Rec., 101.)

Prof. Chandler states the differences thus: "The difference between the oleomargarine butter of the first five sections, and the dairy butter, consists, first, in a slight difference in the composition of the fat. While the fat of the dairy butter consists chiefly of the same simple fats—that is, oleine, margarine and stearine—it also contains a very small percentage, say five or six per cent., of other simple fats, chiefly the fat called butyrine. Secondly, the dairy butter contains the buttermilk in small quantity; this includes, besides water, a small amount of caseine, milk, sugar and saline bodies." (Rec., 155.)

Prof. Wheeler thus recognizes the same fact: "It is precisely these substances which are present in butter only to the extent of a very few per cent., which for the most part are known to chemists as compound ethers, that give to that substance its inherent proneness to change in a sense of deteriorating, and it is also precisely the absence of these substances in the product obtained under the American Mege patent that causes this latter product to have what is generally recognized as a better keeping quality." (Rec., 274.)

Prof. Chittenden presents an analysis of the composition of the two products in the following language: "There is a decided difference in chemical composition between the product resulting from the first five steps of the American patent sued upon and natural butter—namely, the product resulting from the cream of cow's milk. While the difference is not so great quantitively (the natural butter containing six to eight per cent. of the tri-glycerids of the volatile fatty acids; namely, butyric, caproic and others), still these bodies mentioned in the parenthesis give to the natural butter certain

"characteristics which tend to distinguish it from the pro-
"duct of the first five steps of the American patent.
"The practical effect of the presence of these bodies in
"natural butter, which, if contained at all in the oleomar-
"garine oil are in exceedingly minute quantity, tend to
"render the natural butter more prone to change, and
"thus cause it to acquire, on standing, disagreeable and
"objectionable properties or characters. The oleomargar-
"ine oil, on the other hand, being free from any noticeable
"quantity of the above mentioned tri-glycerids, is, there-
"fore, much more liable to preserve its original char-
"acters." (Rec., 296.)

As defendants have not denied the truthfulness of the above facts, except, possibly, by vague deductions that may be drawn from the testimony of their single expert witness, we shall rest confident that the truthfulness of the assertion has been established.

The Strain of the Case—Mege Foreign Patents.

As before indicated, the bill of complaint below was dismissed solely upon the ground "that the complainant's "patents expired April, 1876, by the expiration of the "Bavarian and Austrian patents."

To work this result, it must of course follow that the Bavarian and Austrian patents, either or both, must be for the *same invention* as the patent in suit. The contention upon the part of the complainants being that the process of the American patent is distinct and peculiar in its character and vitally different from the process of either of the above mentioned foreign patents, not only as to the process employed but as to the result obtained. The processes of the Mege American and foreign patents

each consist of a series of steps; and this record shows that it has been taken for granted by both parties that the question of the identity or dissimilarity of these several patents can only be determined and made certain by scientists and chemists; and the only assertion of identity between the process and product of the American patent and of the Mege foreign patents is found in the testimony of the single expert witness of defendants, Prof. George F. Barker, of the University of Pennsylvania.

After complainants had taken their entire *prima facie* case, the defendants introduced without technical objection the above foreign patents, the Mege English, French, Austrian and Bavarian patents with translations of the same, and then called Prof. Barker as their witness.

Prof. Barker's Testimony, and Oleomargarine Record.

We purpose quoting precisely and entirely all that relevant portion of Prof. Barker's deposition which relates to these foreign patents as anticipatory of the Mege American patent, so that your Honors may understand the position and testimony of the defendants upon this point, and for the further reason that it may not be contended that the entire position of the defendants, is not before the court upon the opening of the case, upon the controlling point in its disposition below. Prof. Barker, after testifying that he had examined all of these patents and their translations, and that he believed he understood them, proceeded to compare the Mege patent in suit with these foreign patents with the following statements and conclusions upon his part.

"A. I have compared the said patents together, and, "in my opinion, they are essentially for the same inven- "tion. So far as my knowledge goes Mege made but "one invention, *i. e.*, the artificial production of butter "from fat, by producing the natural work produced by "the cow, when it re-absorbs its fat, in order to trans- "form the same into butter. This, therefore, constituted "the essential feature of the inventor—of Mege—as de- "scribed in all the patents referred to. In this view of "the case I am supported by the authority of Mege him- "self, who says, in his affidavit accompanying this orgi- "nal application for United States Letters Patent, and "shown in the exhibit marked 'Defendant's Exhibit File "Wrapper and Contents, and Specification Original "Mege Patent,' as follows:

"REPUBLIC OF FRANCE, } ss.
"CITY OF PARIS. }

"I, Hippolyte Mége, being duly sworn, do depose and "say that I am a citizen of France; that I am the inventor "of the improvement in transforming animal fats into "butter, above referred to; that French letters patent "were duly issued to me therefor on the 15th day of July, "1869; that I have caused the above application to be "made for the issuance of Letters Patent of the United "States for the said improvement, and that according to "the best of my knowledge and belief the said invention "and improvement has not been in public use in the United "States for more than two years prior to the filing of my "said application in the Patent Office of the United "States for Letters Patent of the United States for the "said improvement. I make this statement conscien-

" tiously, believing the same to be true, and by virtue of " the provisions of section 25 of the act of Congress of " July 8, 1870, entitled ' An act to revise, consolidate and " amend the statutes relating to patents and copyrights,' " and of rule 90 of the said patent office.

" H. MEGE."

Sworn to before me this 28th day of November, 1873.

JOHN MEREDITH READ, JR.,
U. S. Consul General.

" For example, the essential feature of his invention is " described in the French patent as follows: (I quote " from the translation.) ' Artificial digestion. This fat " from which all soluble animal matters have been re- " moved, is mixed with artificial gastric juice (infusion of " pig's stomach in acidulated water) in sufficient qnantity " to immerse it, and the whole is kept at the temperature " of the animal body until all the molten fat appears as a " clear layer upon the surface. It is allowed to settle and " the sediment is submitted to another operation in order " to extract all the fat, which in this case has no longer " the animal odor, but the taste of delicate fat.' The prod- " uct, which is the final result of this process, is thus " described: ' Another distinct product is obtained by this " procedure, destined to render great service to domestic " economy, namely, the fatty body obtained as above " which consists like butter of margarine, olean and a " small amount of volatile oil. This fatty body while " pure, and has undergone no change by heat and chemi- " cal agents, is the fat which the cow re-absorbs in its " organism to pass it through the milk gland. After this " passage the fat is scarcely changed and becomes the " variety of fat known as butter.'

" In the English patent the same feature is described " as follows:

" ' Artificial digestion. This fat deprived of all soluble " animal matters is mixed with artificial gastric juice (in- " fusion of pig's stomach in acidulated water) in sufficient " quantity to immerse it, and the whole is kept at the " temperature of animal heat until all the dissolved fat ap- " pears limpid on the surface. It is left to deposit, and " the deposit is submitted to a new operation to extract all " the fatty body which in this case has no smell of animal " fat, and all the odor of the most delicate fatty body.' " In regard to the product he says: ' The combination of " this process with or without pressure, is naturally ap- " plicable to all suets (graisses en branches). Whatever " suet be employed, I obtain by this process, a sort of " white or slightly yellow lard of absolute purity, and " having an almond odor hitherto unknown in animal fats.' " He goes on: ' There is besides obtained by this process " a distinct product destined to render great service in " domestic economy. In fact the fatty body obtained as " above is composed, like butter, of margarine, olean and " a little odoriferous oil. It is this fatty body when it is " pure, and which has experienced no modification, either " by heat or by chemical agents, which the cow re-absorbs " into her economy in order to pass it into her mammal. " After this passage, the above fatty body is in fact " scarcely modified, and beeomes the variety of fat called " butter.' It must not be forgotten that pure yellow fat " obtained by the process above described, is nothing but " butter in its primitive state.

" The same feature of Mége's invention I find described " in the Austrian patent as follows (I quote from the " translation): ' Artificial Digestion. This fat, from which

"all soluble animal substances have been removed, is "mixed with artificial gastric juice (maceration of a pig's "stomach in acidulated water) in sufficient quantity to "immerse it, and the mixture is kept at the temperature "of the animal body until the fat appears in a clear layer "on the surface. The mixture is allowed to settle, and "the sediment is subjected to another operation in order "to extract all fatty matter, which in this case, has no "longer the odor of animal fat, but the taste of the finest "fat.' The product of this process is thus referred to: "'This entire procedure, with or without pressure, can "be employed in the case of any fresh fat just taken from "the animal. By means of the same, I obtain partly "solid, partly soft, white or faintly yellowish, perfectly "pure fatty bodies, which haves a faint flavor of almonds.'

"In the Bavarian patent, the peculiar physiological fea- "ture of Mége's invention is thus described (I quote "from the transation): 'Artificial Digestion. This fat "now freed from all soluble animal substances is mixed "with artificial gastric juice (stomach of the pig or sheep "in acidulated water) to the extent of immersing it com- "pletely, or to a thousand kilos of fat, 300 kilos of water "100 kilos of bi-carbonate of sodium, and two stomachs "(pig or sheep) are added. This mixture is then kept "at the temperature of the animal body (by means of "steam pipes or otherwise) until all the molten fat has "been dissolved by the pepsin in the stomachs, and ap- "pear in a clear layer on the surface. It is allowed to "settle, and it is decanted and the process repeated in "order to extract all the fatty constituents which now "have lost the odor of animal fat, but have obtained a "particular taste.' The product of this process is thus de- "scribed: 'The entire procedure, with or without pres-

"sure, can be applied to all crude fats. The white or "faintly yellowish fat, obtained by means of the de- "scribed procedure, is remarkably pure and has a taste "of almonds, hitherto not known of any animal fat.' "The pure fat which has undergone no change by heat "or chemical agents, is the same substance which the "cow consumes in its organism in order to have it pass "through the udder in the form of milk, fat or butter. "The fat is therefore but butter in its original form.

"From the above quotations, it appears that the de- "scription of the artificial physiological process required "in order to transform animal fat into butter, which in "my opinion is the novel feature of Mége's invention, is "essentially the same in all these patents, and does "not differ materially from that given in the Ameri- "can patent. In all of them the process is called a "process of digestion. In all of them gastric juice is "made use of, obtained by macerating the stomach "of a pig or sheep in acidulated water, the operation be- "ing conducted at the temperature of the animal body "as given in the foreign patents, or at a temperature not "exceeding 103° (which is essentially the same) in "the American patent. The product, after pressing "out the stearine, is a soft fat, slightly yellowish in "color, with no taste or smell of animal fat, but with a "special odor differently described in the different foreign "patents, and which is composed, as distinctly stated in "the English patent, and in the first American re-issue, to "be composed like butter, of olein, margarine and a little "odoriferous oil. In this first re-issue of the American "patent Mege states as follows: 'The oleomargarine thus "produced, is free from any disagreeable taste or odor, "and is suitable for various culinary uses, and also for re-

"placing olive oil in the manufacture of scraps and also a "superior lubricator, etc. It is composed like butter, of 'olein, margarine, and a little odoriferous oil, and has not "undergone any modification either by excessive heat or "chemical agents.' In the present re-issue he speaks of the "product of his artificial physiological process as follows: "'This greasy matter must not have any taste of fat. It "must on the contrary have the taste of molten butter.' "And again: 'In all cases the oleomargarine is separated "from the stearine when it is cold, and passed to the "cylinder constituting, especially if its yellow color has "been raised, a greasy matter of very good taste, and "may replace the butter in the kitchen, where it is em-"ployed under the name of margarine.'

"In my opinion, therefore the process of artificial diges-"tion, which is the special distinguishing feature of Mége's "invention, together with the product which is produced "by this process, is described in substantially the same "terms in the foreign and American patents specified.

"With reference to the subordinate process associated "with the fundamental processes of artificial digestion, "they may be divided into two classes: 1st. Those "which relate to cleansing and comminuting the fat, and "2d, those which have reference to the separation of the "stearine. The first process consists of essentially the "same steps in all the patents, being as described in the "first American re-issue as follows: 'The first step "preparatory to the process of separation, is to crush, "grind or disintegrate the fat by any suitable machinery, "such as rollers or millstones, and to wash it by a stream "of pure water which may be poured on it while the act "of disintegrating it is being performed, until it is as free "as possible of everything soluble or separable by water.

"The fat being thus thoroughly cleaned and disintegrated, "may be subjected to artificial digestion.'

"The second class of processes, which have for their "object the separation of the stearine, may be divided "into two stages which are essentially the same in all the "patents. These are, first, the stage of crystallization, "and second, the stage of expression. In the first the "product obtained by the artificial digestion is maintained "at a temperature at which the stearine solidifies. In "the second, the entire mass is placed in cloths and sub- "mitted to pressure by which the liquid portions are "expressed, the more solid stearine remaining in the "cloth. In the first American re-issue this stage of the "process is thus described: 'In this condition, the pro- "cess of separating the oleomargarine from the stear- "ine is to be performed. This is done either by packing "the purified fat in sacks of woolen or cotton cloth and "subjecting them to pressure in a press, or by the use of "a centrifugal machine, such as is used for drying sugar. "The effect produced is that the oleomargarine practic- "ally separates from the stearine, and flows out, leaving "the stearine either in the sacks or in the centrifugal ma- "chine, as one or the other means are used.'

"In the present re-issue this stage is thus referred to: "In order to avoid the numerous inconveniences of the "presses which have been hitherto used, he caused the "mixture of stearine and oleomargarine to flow into a "centrifugal machine called hydro-extractor. The greasy "liquid passes through the cloth and the stearine is col- "lected.

"Both classes of these subordinate processes are, there- "fore essentially equivalent, the one to the other, in all "the patents under consideration. They are obvious ap-

"plications of principles well known in the arts at the "time of Mége's invention for accomplishing the purposes "specified.

"The other details of operation referred to in the pa- "tents are entirely collateral, and refer for the most part, "to the preparation of the product for the market.

"For the reasons above given in detail, I conclude that "the essential process which constitutes Mége's invention "is the same in all these patents so far as its special de- "tails are concerned, and that the product of this process "is practically the same in them all.

"By way of recapitulation, I offer the following tabular "comparison of these foreign and American patents. It "will be observed that the first process in the American "patent, called 'neutralization of the ferments' (and here "I would state that the terms given are in all cases the "headings of sections in the patents themselves) is pecu- "liar to the American patent, simply because it provides "an antiseptic treatment where the fat is not at once used "after the death of the animal. In the foreign patents the "fat must be used at once to obtain a good quality of prod- "uct. In the American patent the fats are washed with "an antiseptic solution, and then crushed. In the foreign "patents the processes of washing and crushing are in- "cluded together in the first operation. The third opera- "tion, termed 'pressure,' in the French, English and "Austrian patents, includes the processes of cooling and "crystallization, constituting the third operation of the "Bavarian and the fourth of the American patent. The "fifth process of the American patent, 'separation of the "stearine by centrifugal force,' is simply an equivalent for "the press employed in the other patents. The fourth, "fifth and sixth operations of the French, English and

" Austrian patents, and the fifth and sixth of the Bavarian, " have reference to the preparation of special qualities of " the product, and are therefore, not referred to in the " American patent. These special qualities are especially " applicable for (I quote from the translation of the French " patent): 1st. Alimentation, replacing fats and lards. " 2d. The fabrication of toilet soaps of superior quality. " 3d. The fabrication of ordinary soaps to replace olive " oil and get a larger yield. 4th. The lubrication of " machinery.

" The table is as follows:

Comparison of Foreign and American Patents.

French.	English.	Austrian.	Bavarian.	American.
1st. Complete Washing.	1st. Complete Washing.	1st. Perfect Washing.	1st. Washing and Crushing.	1st. Neutralization of the Ferment. 2d. Crushing.
2d. Artificial Digestion.	2d. Artificial Digestion.	2d. Artificial Digestion.	2d. Art. Digestion.	3d. Concentrated Digestion.
3d. Pressure.	3d. Pressure.	3d. Pressure.	3d. Cooling. 4th. Pressure.	4th. Crystallization in a mass. 5th. Separation by Centrifugal Force.
4th. Uniform Solidification.	4th. Regular Solidification.	4th. Uniform Solidity.	5th. Uniformity and Ductility.	
5th. Ductility.	5th Malleability.	5th. Ductility.		
6th. Decolorization.	6th. Decolorization.	6th. Decolorization.	6th. Decolorization.	

The entire key to the deposition of Prof. Barker is found in his answer to direct question 5, page 378 of the record, where he testifies as follows regarding the invention of the Mége patent in suit:

"A. According to my understanding of the patent, "the invention of Mége consists solely in the physiolog- "ical process which he calls in the patent 'concentrated "digestion.' The other steps referred to are entirely "subordinate in importance, and are for the most part "perfectly obvious applications for well known purposes, "and have been for the most part repeatedly practiced in "the arts before Mége made his invention."

The testimony of Professor Barker is so diametrically opposite to the depositions of the complainant's expert chemists, relating to the same subject-matter, that your Honors will be called upon to decide, not only as to the disputed matters involved, but also as to the qualifications, mental honesty and candor of purpose and opinion of the respective experts.

Attention is called to the fact that Prof. Barker, in qualifying as an expert witness, stated no special or peculiar fitness for the special branch of study necessarily demanded by the facts in this case, neither did he qualify as to any practical knowledge of the questions at issue, as supplemental or confirmatory of any theoretical or scientific knowledge which he may possess.

There is, however, a chapter in the history of Professor Barker's connection with the Mége American invention, and the production of oleomargarine thereunder, which throws grave doubt on the entire disingenuousness of the testimony of the professor. It appears from Professor Barker's testimony that, early in the year 1880, he vis-

ited the factory of the complainants in New York and witnessed the process they carried on in producing oleomargarine, and knew at that time that the product was manufactured under the Mége patent. (Rec., 394 Q. 31, 32.) Professor Barker describes the process as then carried on by the complainants, and as he was familiar with it in 1880. (C. Q. 34 to 42; Rec., 394–396.) It also appears from Professor Barker's testimony, that in April or May, 1880, he received from these complainants or their immediate successors, a retaining fee of $250, under the Mége patent or invention. (C. Q. 53 and 54; Rec., 398.) The same fact is testified to in detail by Professor Mott, who paid the retainer to Professor Barker, under the Mége patent, in behalf of complainants or its immediate successor. (Rec., 189, 190; C. Q. 6 and 7.) Mr. C. D. Deshler, secretary of complainants, also testified to Professor Barker's retainment, and the further fact that at that time there were some six or seven suits pending under the Mége patent, five of them in the State of New York. (Rec., 193; Q. 11.)

Curiously enough Professor Barker while holding his retainer in the year 1880, and in connection with his examination of the process of complainants at that time, gave his opinion as to the patent and process of Mége then owned and professedly practiced by complainants, and at that identical time hotly contended for in several of the Federal courts of this country.

Professsor Barker in answer to C. Q. 57, Rec., 397, was asked to explain how it happened that in 1880, when he was under retainer from these complainants, he gave an opinion to the effect that he had witnessed the process carried on by the complainants in producing oleomargarine under the Mége patent, and gave a certificate recog-

nizing the same and in relation thereto, while in 1884 when under defendant's retainer, against the Mége patent, he testified that the process then carried on by complainants was not at all in accordance or under the Mége patent; [the ugly fact for the professor of course being that the process of the complainants in 1880 is the same as that admittedly practiced by the defendants.]

Professor Barker, when confronted with these facts and crowded to the wall for an explanation, made this sworn statement in answer to said C. Q. 57 (Rec., 400): "I was informed, as I "have already stated and at that time believed, that "the process which I witnessed at the Commercial Man- "facturing Company's works was a modified Mége pro- "cess. *No copies of these patents had been furnished me,* "*and I had at that time never seen them.* No suit was at "that time pending, so far as I understood." (Rec., 400.) The witness stating further, that his sole object in visiting the factory of complainants was to ascertain the cleanliness and wholesomeness of the product.

Unfortunately for Professor Barker, the record exists in his own handwriting, which contradicts and condemns his sworn testimony in this case. Professor Barker did examine the Mége process at complainant's factory in 1880, while under retainer, and did spend two days, at least, in examining the patents in relation thereto; he also, in 1880, wrote a letter to the manager of the complainant corporation, Mr. James Wilson, of New York, and sent in his bill, which shows exactly and precisely and beyond question, what his examination and opinion was while under complainant's retainer. These papers are introduced in evidence as "Complain- "ant's Exhibit, Barker Letter, No. 1, and Complainant's

" Exhibit, Barker Statement, No. 3." They are abundantly identified by the depositions of Professor Mott and Mr. C. D. Deshler, *supra*, and are to the point as follows:

" Early in March, 1880, I was formally retained by the " U. S. Dairy Company, through Dr. Mott. I spent two " days in New York examining the processes, *and about* " *the same time at home, examining the patents and litera-* " *ture and preparing an affidavit, the same which the com-* " *pany afterwards printed.*"

" UNIVERSITY OF PENNSYLVANIA,

" PHILADELPHIA, June 10, 1882.

" THE UNITED STATES DAIRY COMPANY,

" To GEORGE F. BARKER, DR.

" To professional services as chemist in examining the " oleomargarine process, its patents and literature and in " preparing an affidavit upon the same, from March 7th " to 15, 1880, being the equivalent of four days of time " at $50, $200."

Truly indeed, there must arise a grave doubt from these facts, as to both the reliability of recollection and entire honesty of the present position of the defendant's single expert witness.

It would appear that although Professor Barker was prolix in his exposition of Mége's foreign patents, he in the main gave largely his bare opinions, unsupported by any special reasoning or facts, the general conclusion being that each of the above identified foreign patents, exhibited and clearly established the product of the Mége American patent and substantially the same process for producing this product. It would appear also that Prof. Barker seems to have added to his other asserted qualifications

the function of a lawyer, as is evidenced by his quotation in full of one of the oaths of Mege filed in connection with his application for his American patent. We take it that the question presented to Prof. Barker was entirely foreign to any question of legal construction that can be placed upon any written declaration of Mege, and if Prof. Barker had desired to be entirely fair to the Mege invention of the American patent, he would have also quoted the petition of Mége accompanying his specification, which states "that your petitioner has invented a " new and useful improved means for transforming animal " fats into butter, which he does verily believe had not " been known or used prior to the invention thereof by " your petitioner."

Take Prof. Barker's deposition all in all, it may perhaps raise some doubt whether the opinions and conclusions of Prof. Barker are founded upon his supposed construction of written instruments or upon his knowledge as a scientist.

As before indicated, the question of dissimilarity or identity between the Mége American patent and his Austrian and Bavarian patents, etc., is a question that can only be decided by experts and scientists; and lest any one expert or scientist might be mistaken in his deductions and conclusions, complainants, after the taking of Prof. Barker's testimony, called the four distinguished chemists above referred to, viz: Professors Morton, Chandler, Wheeler and Chittenden to confirm by practical tests their scientific knowledge, and make as plain as human testimony and investigation can make anything certain, the knowledge, reasonings and conclusions, appearing in their sworn depositions as to these matters. We now call the attention of the court particularly to the testimony of each

of these learned and reputable witnesses; first premising our handling of this branch of the subject by the statement that each of the above chemical witnesses found each of the foreign Mége patents to be for a different invention from the American patent both as to product and process. We shall here quote and identify at large the testimony of complainant's experts upon this below vital point, and earnestly and confidently urging your Honors to a careful study of the clear, logical and convincing analysis given by such experts to each of said foreign Mége patents, and their comparison with Mege's American patent in question, especially as regards its Mege Austrian or Bavarian patents.

Professor Morton's deposition, showing Mege distinct process in American patent, from foreign patents.

Professor Morton has so carefully and candidly, and with such modest clearness of statement, made such analysis that we give his testimony *in haec verba*, believing, as a truthful and correct presentation of the whole subject, nothing can be added to it, or taken away.

Prof. Morton, after stating that he had carefully read the deposition of Prof. Barker and understood the same as to all opinions and conclusions therein contained; and after stating that he had read and thoroughly understood all the Mége foreign patents, then stated that none of such foreign patents in his opinion suggested or contained the invention of the Mege American patent, giving his reasons "*in extenso*" as follows (Q. 4, Rec., 209):

"I do not find that either of the several exhibits mentioned in your question, that is the English, French, Bavarian or Austrian Mege patents, contain or suggest the invention described and shown in the letters patent

"sued on in this case. In the first place, I find in the "patent sued on in this case, which for brevity I will in "future refer to as the American patent, the following "new steps or modifications of steps in the process, which "are not to be found in the other patents already named, "and which for brevity I will in future refer to as the "foreign patents. These new or modified steps are as "follows:

"*First.* I find in the American patent that directions "are given for the complete disintegration or comminu- "tion of the fatty substance to be treated, so as to liber- "ate, or prepare for liberation, the fatty substance in each "individual fat cell. This is described in the following "language: 'A complete crushing is necessary in order "to obtain rapid work without alteration. For this pur- "pose, when the substance is coarsely crushed, he let it "fall from the cylinders under millstones, which com- "pletely bruised all the cells.' In none of the foreign pat- "ents do I find any suggestion even of such a treatment as "this. Thus, in the English patent, at the corresponding "stage of the process, I find the following language: "'Complete washing. This is obtained by reducing or "crushing the fresh suet under a shower of fresh water, "which falls between two rollers at the same time as the "fat, which, divided by the water and the pressure, falls "into a vessel in which the washing is completed by a "stream of water.' In the succeeding paragraph, also, "the washed fat just described is referred to as this fat, "deprived of all soluble animal matter.' The above "quotations, I think, clearly show that the operation to "which they refer is simply a thorough washing, with "only such a crushing and breaking of fatty masses as "may be necessary to secure the removal of soluble ani-

"mal matter. It is this partial crushing or breaking up "which is alluded to in the American patent where it says "'when the substance is coarsely crushed.' My opinion "as to the character of the treatment described in the "above quotations from the English patent is confirmed by "a number of experiements which I have made in the "crushing of fat by passing it between rollers with a "stream of water. These experiments show that it is "impossible by such a treatment to do more than so crush "and break the masses of fat as to secure a thorough "washing, and that anything like such a complete crush-"ing as would completely bruise all the cells, whether "the rollers are substantially smooth, as might be assumed "from the language of the English patent and the French "patent, and the Austrian patent, or are provided with "conical cogs, as stated in the corresponding portion of "the Bavarian patent.

"As regards the language of the several foreign pat-"ents, this is substantially identical in the English, French "and Austrian patents, but differs slightly in the Bava-"rian patent, as I have already indicated, by the introduc-"tion of a reference to conical cogs on the rollers be-"tween which the fatty matter is crushed in the process "of washing. This, however, I find to be an entirely "immaterial difference, since the same effects are pro-"duced whether the rollers are substantially smooth (that "is, only rough enough to secure the feeding through of "the fat placed between them) or are provided with con-"ical teeth. In all cases, no further effect can be obtained "than such a breaking up of the fatty masses as will se-"cure a thorough washing of the fat, but will not, to any "extent, so completely crush it as to 'completely bruise "all the cells.' It is, therefore, manifest from these doc-

"uments that the invention set forth in the foreign patents "only contemplated a thorough washing of the fat at "this stage, while the invention of the American patent "contemplates, in addition, such a perfect crushing or "grinding as would 'completely bruise all the cells.'

"The next difference which I observe between the "American and foreign patents is in that part alluded to "under the head of digestion. In the American patent "specific directions are given as to the amount of an ar- "tificial gastric justic, which is to be added to the fat and "heated therewith to a temperature not exceeding 103° "Fahrenheit for three hours. The amount of this gas- "tric juice directed to be used is two litres, which would "be about four and four-tenths pounds to each hundred "kilogrammes (which would be about four hundred and "forty pounds) of fat; this is manifestly two per cent. of "gastric juice by weight as compared with the fat. In "the English, French and Austrian patents I find simply "a general direction to prepare a gastric juice with a "pig's stomach and acidulated water, no quantities being "named, and to use a sufficiency of this to immerse the "fat; such a sufficiency, I find by experiment, would be "somewhere from thirty to fifty per cent. of the weight "of the fat. The Bavarian patent, in its corresponding "clause, gives two sets of directions: The first substan- "tially identical with that of the English, French and "Austrian patents, but the second containing proportions, "these being to one thousand kilogrammes of fat three "hundred 'kilos' of water, one 'kilo' bi-carbonate of "soda, and two stomachs of a pig or sheep. In this case "the amount of gastric juice would be substantially thirty "per cent. of the fat.

"A comparison of these documents makes it, I think,

" very plain, that while in the foreign patents this process " involving an artificial digestion was an essential and vital " feature in the American patent, it was regarded as of " very subordinate importance, and not depended upon for " any material and essential result. In this connection " also, I observe that the American patent contains a step " not found in any of the foreign patents, that, namely, " which is referred to in the following language: 'He " slowly raised the temperature to about 103° F., so that " the matter shall completely separate.' Bearing in mind " that the passage just quoted occurs in a paragraph " whose earlier portion contains a full description of the " gastric digestion at a temperature not exceeding 103° " F., it seems to me that the quoted passage plainly refers " to a subsequent step; in other words, the first part of " the paragraph indicates a digestive treatment conducted " at a temperature which (as is well known), is that of " the greatest activity or efficiency for gastric juice.

" After the fatty matter had been melted by this arti- " ficial digestion; that is, had been rendered through it, " by the softening effect, due to this temperature, and by " the destruction and removal of the confining tissues by " the action of the gastric juice, then as directed in a " later part of the paragraph, the temperature is to be " raised slowly to some point about 103° F., and as little " over this as possible, but so that the greasy matter " should completely separate from the gastric juice and " tissue, rendered more or less soluble by its action. We, " therefore, have two distinct steps—one an artificial di- " gestion, which acting on the tissue of the thoroughly " bruised cells, should so dissolve it as to liberate the " contained fat, and thus render the entire mass practi- " cally fluid. Secondly, another step, that of a gradual

"raising of temperature by which a separation would be "effected between the liberated fat and the tissue gastric "juice and products of its reaction, causing the liberated "fat to collect in a continuous mass above, while the "other materials settle out below; of this second step, as "I have already said, I find no description or suggestion "in the foreign patents. These all assume, that under "the influence of the large amount of gastric juice which "they direct us to use, a separation will be effected "between the pure fat from the interior of the globules "and the gastric juice in which there was remaining the "products of its reaction on the animal membrane. All "these foreign patents manifestly assume that by the gas-"tric digestion, as there carried on, a complete separation "of this sort will be effected. The American patent on "the contrary, recognizing the fact that such a separation "is very imperfectly effected, provides this new step of "heating as an efficient means for securing this desired "result.

"Comparing, then, what may be called the first division "of the Mége process, as expressed in the American and "foreign patents, namely: the obtaining of a fatty sub-"stance separated from animal tissue, and free from all "offensive taste or smell, I should say, that in the foreign "patents artificial digestion, as there set forth, is exclusively "relied upon to do the entire work; the fat is only suffi-"ciently broken up to secure thorough washing, then "thirty per cent. or more of gastric juice is added, and "this is manifestly expected to completely transform and "remove all the animal tissues, so as to liberate the fatty "matter and allow it to form a clear layer on the surface "of the aqueous fluid containing the gastric juice, etc. "In the American patent, on the other hand, the artificial

"digestion is relegated to a very inferior and manifestly "unimportant office, for in the American patent, the fat "is not only so broken up as to admit of thorough "washing, but is ground between millstones until every "cell is bruised; under these circumstances, relatively "little is left for the gastric juice to accomplish, and ac- "cordingly we are directed to apply of this fluid only "two per cent. instead of thirty or over. Yet further "realizing the difficulty of separating the fat by the "action of gastric juice alone, the American patent directs "us to bring about this result by slowly raising the tem- "perature to or about a low point, but until the required "separation is secured by this application of gradually "increasing heat.

"The second great division of the Mége invention, as I "understand it, consists in the process for removing the "excess of stearine present in the fatty substance obtained "as above. In the American patent this is directed to be "done in the following manner: The pure molten fat is "to be set aside in such a way that it will slowly cool to "a temperature not less than eighty-six degrees Fahren- "heit, for soft fats, or ninety-eight for hard fats; by this "means a large part of the stearine becomes solid in the "form of granules or crystals throughout the mass, while "the more fluid constituents of the fat remain in a liquid "form, surrounding and interminged with these stearine "granules, this being the condition of the product, the "same is caused to flow into what is known as a centrif- "ugal, by means of which the fluid portion is drained "away and the stearine is left in a compact mass; the "fluid drained away is then of a proper composition and "physical constitution for use as a substitute for butter.

"In the foreign patents, however, I find that a different

"process is directed to be pursued, though the result "aimed at is much the same. In these patents we are "directed to cool the fatty matter, not to any particular "temperature, but until it becomes so solid that being "turned out on a table from the vessel in which it was "chilled, it can be cut into blocks about half an inch "thick, and of any convenient size in their other dimen- "sions. These are to be wrapped in cloth and placed "between hot plates in a press. Under such conditions "as these it is manifestly assumed that the heat of the "hot plates will melt out the more fluid portions of the "fat, and leave the stearine unmelted. This is, however, "only true to a limited degree. When a fatty substance "has once become solid, it will remain so at a temperature "considerably above that at which it became so; in other "words, it will take a much higher temperature to melt "it again than would have been needed to keep it fluid. "As the result of this, it is manifest, that while heat is "penetrating to the interior of the blocks of solid fat, a "considerable amount of the stearine at the surface will "be melted, and that thus the fluid portion forced out "from the press would contain a much larger amount of "stearine than would be found in it when the process of "the American patent in this regard was followed. In "other words, to keep the fluid fats melted, and remove "them by pressure, while so melted, from the solid stea- "rine, would manifestly be a much more effective mode "of separation than to allow them also to become solid, "and then endeavor to melt them out from between the "stearine crystals by the use of hot plates. It is, there- "fore, in my opinion, manifest that in this respect, also, "the process of the American patent, both in its mode of "operation and in the results obtained, is a different pro- "cess from that of the foreign patents.

"This general conclusion is also confirmed by experi-
"ments which I have recently made at the factory of the
"Commercial Manufacturing Company at Brighton, near
"Boston. These experiments showed, that when the
"fatty substance was allowed to become so solid by cool-
"ing that it could be cut into slices half an inch thick, and
"was then placed in a press between hot plates, it was
"impossible to obtain an oil at all comparable, in compo-
"sition and consequent fitness for use as a substitute for
"butter, with that secured by the process of the Ameri-
"can patent. Where the solid fat and hot plates were
"used, a considerable amount of stearine was wholly or
"partially melted, and forced out of the cloths with the
"fluid constituents of the fat which it was desired to se-
"cure; indeed, the oil obtained in this manner was only
"slightly different from the rendered fat treated, that is,
"had only a small part of its excess of stearine removed.
"In addition to this general discussion of the subjects in-
"quired about in your question, I will say that I have
"recently carried out processes of these various foreign
"patents as far as it was possible to do so, in the follow-
"ing manner, and with the results I shall state.

"In the first place, I prepared a gastric juice from the
"stomachs of pigs, according to the usual manner set forth
"in text books on physiological chemistry; that is, I made
"up a solution of hydro-chloric acid of such strength that
"it contained about four-tenths of one per cent. of acid in
"water. In this acid was macerated for about two hours
"two pigs' stomachs to 200 pounds of such acidulated
"water. This produced a very active gastric juice, as I
"proved by mixing half a pound of it with a half a
"pound of fresh blood albumen, which it digested or
"dissolved with great rapidity, rendering the whole mass

"liquid in about half an hour. Having placed 110 pounds "of fresh fat (which had been thoroughly washed and "broken up by being passed through grooved and toothed "rollers with a stream of water) in a jacketed kettle, I "added to the same seventy-four and one-half pounds of "the gastric juice above mentioned, and maintained the "mixture with constant stirring at a temperature between "100° F. and 103° F., from 3:20 P. M. of September 2d, "until about 3 A. M. of September 3d. At this time the "gastric juice had entirely broken down and dissolved "the tissues, so that the fatty matter had melted together "into a thin salve-like mass, but still retained enough of "the watery fluid to form an emulsion very much like "the salve called 'cold cream.' The material had been in "this condition for some time without change, and as it "began to have a disagreeable (though not a putrid) "taste and smell, I concluded that it was useless to con-"tinue the expreriment longer, and therefore had steam "turned on in the jacket, so as to effect a thorough sep-"aration of the pure fat from the aqueous fluid mingled "with it. After this had been effected, I took the tem-"perature of the fat and found it to be 128° F. Before "this separation of the oil the taste of the nearly fluid or "melted fat was decidedly disagreeable, though not putrid. "To my own mind, it suggested what I should call the "gluey flavor which I always notice in Liebig's Beef Ex-"tract, when no other strong flavor is added to mask it; "when a greater heat had been applied and the oil was "entirely separated, the flavor became less offensive, and "to my mind gave the impression of cooked meat or soup, "but at no time during the entire operation (and I tasted "the material from time to time) did I perceive anything "suggesting the special distinctive flavor of melted but-"ter.

"To express the difference which I find between the "foreign and the American Mége patents as heretofore "defined, I should say that all the foreign patents have as "their central idea in reference to the first principal step, "the removal of the animal tissue from a thoroughly "washed fat by a process of artificial digestion solely "this being absolutely the only means suggested for ob- "taining that end. In the American process, on the con- "trary, I find the central idea of the corresponding step "to be the separation of the pure fatty matter from the "animal tissues by a moderate heat aided by a very "thorough mechanical breaking up or comminution, and "some slight artificial digestion effetced by a minute per- "centage of artificial gastric juice; as regards the second "principal step, namely, the removal of the excess of stear- "ine, I find that this is directed to be accomplished in the "foreign patents by allowing the entire mass to gradually "cool and harden, and then melting out the more fluid "portion by the employment of hot plates in a press. In "the American patent, on the other hand, directions are "given to allow the entire mass to cool only to such a "point as would cause the stearine to become solid, leav- "ing the other constituents liquid, and then to separate "this liquid from the intermingled solid by the use of a "centrifugal aided by a press, without any application of "heat, either by hot plates or otherwise. Before closing "this answer I desire to correct a mistake which I made "inadvertently in an earlier part of the same, and which "I noticed almost immediately after, but forgot to correct "as I intended to do, at the close of the next paragraph. "This error was the statement in my testimony at page " , which I request the notary to mark with a star (the "notary has so marked *). This is the statement that the

"fat was to be treated according to the American patent "with gastric juice for three hours, these words, 'for "three hours,' should be omitted, as the patent does not "specify the time in this connection."

A brief digest of the above quoted testimony of Professor Morton shows that the Mége invention as shown by the patent in suit consists of five steps:

1st. Neutralization of the ferments.

2d. Complete crushing and bruising of the fat cells.

3d. Concentrated digestion at 103° Fahr. two per cent. gastric juice with the fat melted at an increased low temperature until all the tissues are separated.

4th. Crystallization at a uniform temperature, 86° F. for soft and 90° F. for hard fats, leaving oil fluid.

5th. Separating oil and stearine at the crystallization temperature by a centrifugal or press.

It is so perfectly evidenced from the last above cited depositions, that the Mége American patent differs from each foreign patent in these special particulars: 1st, the neutralization of the ferments is entirely lacking in each foreign patent; 2d, complete crushing is provided for in the American patent, *so as to bruise all the fat cells*, this being necessary "to obtain rapid work without alteration." No foreign patent provides for such complete crushing, but does provide for coarse crushing and washing, both of which actions renders difficult if not impossible the production of the American product, and certainly involves a different process. 3d. Each of the foreign patents makes vital the use of an artificial digestion, produced by a large proportion of gastric juice. The American patent practically dispenses with this gastric juice as an operative element in the process and product, and re-

lies upon the low increase of temperature to produce complete separation. 4th. Each foreign patent directs the cooling of the product to solidification so as to be sliced into pieces to be pressed, while the American patent directs a crystallization at a *uniform* temperature, about 86°, leaving the oil fluid. 5th. Each foreign patent provides for the separation of oil from the stearine by pressing the cold-sliced or solidified cakes between hot or warm plates, while the American patent separates the oil and stearine with the product at the temperature of uniform crystallization, viz: 86°. Thus it will be seen that not a single step of the foreign patents is found in the American patent, or any equivalent therefor. It will also be seen that the artificial digestion, cooling to solidification and pressing between hot plates, found in each foreign patent, is an absolute bar and prevention to the production of the product of the American patent.

The particular advantage, effect and result of the uniform crystallization of the product and the pressing and separation at that temperature, is stated in detail in a separate answer of Prof. Morton and is as follows:

" A. There is, I think, a very great advantage in lim-
" iting the temperature at which the crystallization is al-
" lowed to take place in the manner set forth in this
" patent. In other words, by allowing the melted mixture
" to cool down only to a temperature of 86° Fahrenheit
" with certain fats, and 98° Fahrenheit with others, the
" result is secure that the stearine only crystallizes in
" granules through the mass, while the rest of the sub-
" stance (that being the fluid oil which it is desired to ex-
" tract) remains fluid and can be readily separated by
" well-known means from the solid stearine. If the cool-
" ing and consequent crystallization were allowed to go

" on at or to a lower temperature, then not only would " the stearine crystallize, but so also would the palmatin, " or as it was formerly called, margarine; if, under these " circumstances, mere mechanical means were employed " to extract the fluid oil, we should get a substance con- " sisting mainly of olein (which in fact resembles olein oil) " and is much too fluid to serve as a substitute for butter. " If to avoid this result we attempt to extract the palmatin " as well by the use of hot plates in the press, then in " our effort to melt out the palmatin we shall, of necessi- " ty, melt and press out fat of the stearine, and so get an " oil containing too much stearine to be useful as a sub- " stitute for butter; in other words, by checking the pro- " cess of crystallization at a point when all the material " we wish to extract is still fluid, we render this extraction " certain and easy." (A. to Q. 17. Rec., 221.)

For more accurate convenience, and in reply to Prof. Barker, and at the request of complainants' counsel, Prof. Morton has arranged a comparison table and an analysis of the several foreign patents, American patent and defendants' process which we herewith present and which most fairly and forcibly exhibits and makes plain the mat- er contested for by the complainants. This table being sanctioned and endorsed by Profs. Chittenden and Wheeler.

Complainant's Exhibit Morton Comparison Table.

A. F. S. Sept. 12, 1884.

Comparison of Mége Patents, Foreign and American, with each other, and with the process of Defendants.

FRENCH.	ENGLISH.	AUSTRIAN.	BAVARIAN.	AMERICAN.	DEFENDANTS'.
				1st. Neutralization of the Ferments by chemicals.	1st. Neutralization of the Ferments by the use of ice.
1st. Complete washing.	1st. Complete washing.	1st. Perfect washing.	1st. Washing and crushing.	2nd. Complete crushing and bruising of all the fat cells by millstones.	2nd. Thorough hashing, crushing and comminution of the fat to a pulpy mass.
2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice.	2nd. Artificial digestion, with large proportion of gastric juice, or with 30 p. c. of an alkaline pepsine solution.	3rd. Concentrated digestion at 103° F. with 2 p. c. of artificial gastric juice until the fat is melted; also an increase of temperature until the oil is completely separated at a low temperature.	3rd. Heating until the fat is melted, and then raising the temperature until the oil is entirely separated at 120° to 130° F., this being a low temperature for rendering.
3rd. Cooling to complete solidification, so as to be cut into cakes half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into pieces half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into slices about half an inch thick.	3rd. Cooling to complete solidification, so as to be cut into slices one inch thick.	4th. Crystallization of stearine in mass at uniform temperature of 86° for soft, and 98° for hard fats, leaving the oil fluid.	4th. Crystallization of stearine in mass at uniform temperature of 84° to 86° F., leaving the oil fluid. The fats used are soft fats.
4th. Pressing between hot plates to melt out the oil.	4th. Pressing between hot plates to melt out the oil.	4th. Pressing between warm plates to melt out the oil.	4th. Pressing between hot plates to melt out the oil.	5th. Extraction of the fluid oil by a centrifugal (aided if necessary by a press) at the temperature of the crystallization as above.	5th. Extraction of the fluid oil by a press at the temperature of the crystallization as above.

Prof. Charles F. Chandler's Opinions regarding the non-similarity between Mege American and foreign patents.

Prof. Chandler gave his deposition in full upon complainant's case *prima facie*, declaring for the validity and scope of the Mege American patent and finding a clear infringement thereof in the process and product of defendants. He, however, was absent in Europe at the time of the taking of the complainant's rebuttal testimony relating principally to said foreign patents, but lest the absence of his deposition might give rise to adverse criticism, and to further show that the opinion and knowledge of Prof. Chandler were entirely in accord with those of Prof. Morton and with the other of complainant's chemist witnesses, Prof. Morton, who was familiar with such opinions, was specially interrogated in relation thereto, and replied as follows:

"Prof. Chandler is at present traveling with his family "in Europe, and is not expected to return until the 1st of "November. At the time of making the deposition re- "ferred to, Doctor Chandler was, to my personal knowl- "edge, familiar with the patents named, and his opinion "in reference to the identities and differences in these "patents was substantially identical with that expressed "by me in my deposition just completed." (Rec., 267.)

Prof. C. Gilbert Wheeler's Testimony finding Marked and Radical Differences Between Mege American Patent and Mege's Austrian and Bavarian Patents, etc.

Prof. Wheeler, after the giving of the deposition by Prof. Barker, personally familiarized himself by study and practical experiment with each of the foreign patents of Mege and with the asserted product result therefrom, and qualified himself in every way to testify concerning the Mege American and foreign patents, his testimony as to this matter being as follows:

"As the result of my careful examination of the ex-
"hibits referred to in your question, I reply that in my
"judgment, the same, namely: the Mege French, Eng-
"lish, Austrian and Bavarian patents, do not contain or
"suggest the invention which is described in the letters
"patent sued upon in this case. My reasons are based
"upon a number of considerations; referring in the first
"instance to the second paragraph of the American pat-
"ent, in which 'crushing' is spoken of as the first me-
"chanical operation, the patent states: 'a complete crush-
'ing is necessary in order to obtain rapid work without
"alteration. For this purpose, when the substance is
"coarsely crushed, he let it fall from the cylinders under
"millstones, which completely bruised all the cells.' Thus
"evidently contemplating as fully as possible the complete
"comminution and entire disintegration of the tissue en-
"closing the fat globules. In the corresponding para-
"graph of the French, English, Austrian and Bavarian
"patents I find that what is contemplated at this stage is
"only a very partial and incomplete disintegration and

"subdivision; but, on the other hand, as the paragraph is "entitled 'a complete washing,' this is exhibited by the "language employed in the English patent, which is sub- "stantially that of the other foreign patents in the corre- "sponding paragraph (when I allude to foreign patents "hereafter in this testimony let it be understood that I "mean the English, French, Austrian and Bavarian). "The English patent reads in this paragraph: 'This is "obtained by reducing or crushing the fresh suet under "a shower of fresh water which falls between two rollers "at the same time as the fat, which, divided by the water "and the pressure, falls into a vessel in which the wash- "ing is completed by a stream of water.'

"It is evident, on simple inspection of the terms em- "ployed, that whereas a complete, thorough washing "could, and probably would, result from this operation, "that a thorough and complete crushing, or minute sub- "division, could not possibly be obtained. Not only is this "view warranted by an inspection of the language de- "scribing this stage of the process, but I have found upon "actual experiments, made both in Chicago and at Bos- "ton, with the precise mechanical arrangements as pre- "scribed in this part of the process, that only a loose, "very coarse and incomplete breaking up of fat masses is "hereby accomplished, ample, it is true, for the satisfac- "tory and complete washing of the fat, but for nothing "approaching in the least the 'complete crushing' which "is necessary, according to the American patent.

"Passing now to the consideration of the next step in "the process, that spoken of under the head of 'diges- "tion,' I find the foreign patents differ quite as materially. "In the directions given for preparing the artificial gastric "juice in the foreign patents, an amount of this juice is

"prepared, sufficient in quantity to immerse the fat, which "amount, as I have found upon repeated experiments, "would be from thirty to forty per cent. in weight of the "fat employed; and even in the one alternative method "permitted in this paragraph, as directed by the Bavarian "patent, the amount of the artificial gastric juice is specific- "ally stated as being 300 kilos to 1,000 kilos of the fat, or "thirty per cent. On the contrary, the American patent, "under which this suit is brought, directs the employ- "ment of artificial gastric juice in the proportion of 'two "liters per hundred kilos of greasy substance.' The "small amount here used clearly indicates that the arti- "ficial gastric juice was not material or much relied "upon, while, on the other hand, as we have seen, the "amount taken of this gastric juice indicates its very "prominent function in this stage of the process. If the "amount prescribed by the foreign patents was neces- "sary to perform the solvent action necessary under "those patents, the small amount employed in the Ameri- "can process would have been totally inadequate to per- "form a similar or corresponding important service.

"A further difference in the American patent, in con- "nection with the operation designated as digestion, I fail "to find, or its equivalent, in either of the foreign patents. "I refer to the sentence in the American patent, para- "graph 3, where he states: 'He slowly raised the tem- "perature to about 103° Fahrenheit, so that the matter "shall completely separate.'

"Directions of this sort, or anything approaching "thereto, I emphatically regard as entirely wanting in "the foreign patents. This increase of temperature to "about 103° Fahrenheit, so that—or to employ my own "language, expressing, I think, the idea of the inventor,

"*is in order that* 'the matter shall completely separate.
"The corresponding descriptions in foreign patents con-
"template and describe such a procedure as shall allow
"the fat to remain in contact with the artificial gastric
"juice, at the temperature of animal heat, until all the
"dissolved fat appears limpid on the surface.' In the
"American patent such a separation of the fat was, by
"the inventor, regarded as incomplete and unsatisfactory
"for this purpose, and hence he directs the application of
"a sufficient heat, about or in the vicinity of 103° Fahr-
"enheit, but yet *adequate*, as he specifically states, 'so
"that the matter shall completely separate.'

"To review, then, and concisely express the character-
"istics of the two processes, the one contemplated by the
"foreign patents, and the other contemplated by the
"American patent, we may regard that the former de-
"pended upon a thorough washing of the crude fat in
"connection with a coarse and imperfect crushing, this
"to be followed by a digestive operation under the in-
"fluence of a large amount (thirty to forty per cent.),
"and at a temperature, as the uniform language of the
"foreign patents expresses it, 'of the animal body.' This,
"from my experience, which during the last four years
"has been very extensive in experiments relative to arti-
"ficial digestion, should, under no circumstances, exceed
"the temperature of 103° Fahrenheit. The usual limits
"regarded as the most favorable for artificial digestion are
"96° to 98° Fahrenheit as a minimum, and 103° Fahren-
"heit as the extreme maximum. Another division of the
"process involved in the question brings to light a still
"farther and most radical point of difference between the
"American patent and the foreign patents; this is the
"operation by which it is intended to effect a separation

"of the stearine from the margarine (I use this word "margarine as it is still retained in technical literature, "although chemical science at the present date has dis- "carded it—margarine, as formerly considered, now hav- "ing been shown by later investigations to be a mixture) "and olein. In all the foreign patents I find that the "cooled product is, as a mass, cut into pieces or slices "about an inch thick, as specified in some of the foreign "patents, or half an inch thick, as specified in the English "patent, then put 'into a cloth between hot plates of a "press.' It is then submitted to pressure, and yields the "oil contemplated as the final product by the foreign "patents, intended as a substantial equivalent as edible "fat to be used in the place of butter. In the American "patent the process at this stage is quite different. The "product is not allowed to become rigid so as to admit "of cutting it into thin slices, but is retained at a tempera- "ture fixed and carefully guarded, ranging from 86° Fah- "renheit for the soft fats, to 98° Fahrenheit for hard fats; "thus retained at this uniform temperature for 'a certain "time, more or less long, according to the fats, the stear- "ine is deposited in the form of teats at the middle of the "oleomargarine liquid.'

"This retention in the American patent of the product "at a temperature so well and carefully regulated, would, "as is well known by scientific men, permit of the semi- "crystallizing out of the stearine from the mixture of "stearine, margarine and olein, of which the mass is "composed—and in this semi-crystalline, or granular "stearine, margarine and olein, would be sucked up or "absorbed mechanically or by capillary action, such as a "sponge absorbs and retains water. Such a product, thus "carefully and cautiously prepared, under the conditions

"as to temperature, favoring a spontaneous separation out "from the mixture of the stearine alone, would be a most "favorable one for yielding, without recourse to hot plates, "the product relatively poor in stearine and hence perfectly "edible and wholesome, entirely suited for the purposes "contemplated by this invention. Where, however, as "distinctly prescribed, the cooled, now solid mixture of "stearine, margarine and olein, is to be exposed to the "action of hot plates, a product would be obtained under "the circumstances of the case, necessarily too rich in "stearine to be adapted to the uses contemplated by the "invention in the American patent; this latter product "would be a substance having a pure, agreeable, bland "taste, with entire freedom from the granular adhesive "sensation upon the tongue and palate which charac- "terizes the product made under the foreign patent and "with the employment of hot plates.

"The rationale of this deduction is upon scientific "grounds very simple; the sliced mixed fats inclosed in "the cloth, and in contact with hot plates, receives and "transmits to its interior, but very sluggishly indeed, the "heat radiating from and transmitted by the aforesaid "plates.

"It is well known to chemists that fats, especially solid "fats, are exceedingly poor conductors of heat, and long "before the oleomargarine within the interior of the solid "cakes had become sufficiently fluid to escape through "the cloth, a large portion of the exterior part would "be thoroughly melted, thus yielding to the oil dripping "from the press its entire amount of stearine; *such an oil "would not have the properties of that prepared accord- "ing to the American process, not only as to flavor, but "also as to grain or structure, and, farther, would*

"*solidify at a temperature several degrees higher than* "*the oil furnished by the American patent.*" (Rec., 270, 273.)

PROF. RUSSELL H. CHITTENDEN'S DEPOSITION, CLEAR AND COMPREHENSIVE, TO THE DISTINCT IDENTIFICATIONS AND VITAL DIFFERENCES BETWEEN THE MEGE AMERICAN AND FOREIGN PATENTS.

Prof. Chittenden, as well as Professors Morton and Wheeler, spent a very considerable period of time in following practically the invention of each of the Mege foreign patents, and in qualifying himself in this manner to demonstrate the actual correctness of his opinions and conclusions; he also compared the American patent in suit with the foreign patents, and throughout a deposition of some length but of great and convincing clearness, stated facts and conclusions upon which appellants rely for a reversal of the judgment of dismissal below.

Prof. Chittenden presents his analysis as follows:

"I do not find the process of the American patent con-
"tained in any of the foreign patents specified in your
"question. In fact, I find very decided differences be-
"tween the process of the American patent, on the one
"hand, and the processes of the foreign patents, on the
"other.

"Such comparisons as I may draw between the Mége
"foreign patents and the American patent (Re-issue No.
"10,137) are based not only upon the wording of the
"patents and upon my general and special specific knowl-
"edge, but also upon my personal observation of the re-
"sults of each of the processes as carried out under my

"personal supervision at the factory of the Commercial "Manufacturing Company at Brighton, in conjunction "with Professors Morton and Wheeler. By examination "of the foreign patents (meaning Bavarian, Austrian, "French and English), I find that the first sections of the "patents are substantially identical. The first section of "the foreign patents, headed 'Complete Washing,' I "find to be a simple description of a method for "'thoroughly freeing the fat from all objectionable "material prior to the second step, that of artificial "digestion.' The following quotation, from the En- "glish patent, which says that 'this is obtained by "reducing or crushing the fresh suet under a shower "of fresh water which falls between two rollers at the "same time the fat, which, divided by the water and the "pressure, falls into a vessel in which the washing is "completed by a stream of water,' plainly indicates to "my mind that the only object to be accomplished by "this first section is that of complete washing. The "necessities for this thorough washing are to my mind the "following: First, in view of the long time which the "fatty matter, according to the carrying out of the pro- "cess, must be exposed at the temperature of the animal "body to the action of a large *quantity* of artificial gastric "juice, it is evidently necessary that all traces of blood or "adhering muscle tissue should be removed as far as pos- "sible, since, as is well known, such substances are ex- "ceedingly prone to decay, especially at the body temper- "ature, and thus give rise to deleterious and even offen- "sive products which might materially affect the charac- "ter of any fatty product obtained. For such complete "washing it is self-evident that a crushing or dividing of "some kind is absolutely necessary, but that anything

" other than a coarse crushing is intended, is to my mind
" wholly improbable. That this reducing or crushing of
" the fat called for in the foreign patents was intended to
" be of a totally different kind from that specified in the
" American patent, which calls for a complete crushing
" with complete bruising of all the cells, is evident to my
" mind from the statement in the latter portion of the first
" section of the foreign patents, in which it is stated that
" the subdivided fat ' falls thence into a tank, where a cur-
" ' rent of cold water completes the washing.' Now it is
" a fact well understood by persons familiar with the
" behavior of finely divided fat, such as would be obtained
" in the carrying out of the section of the American pat-
" ent, where the fat cells are completely bruised, that
" when mixed with water, especially with water in mo-
" tion, finely divided fat is known to form an emulsion
" with the water, which would interfere very materially
" with its further separation; in view of this fact, it ap-
" pears to me wholly improbable that the inventor in the
" first section of the foreign patents intended to specify
" anything other than such a coarse crushing as would
" be deemed suitable for the complete washing of the fat.
" It appears to me, moreover, that in the second section
" of the American patent we have evidence of an im-
" provement in the method of crushing the fat, designed
" not to aid the washing of the fatty material, but rather
" to favor liberation of the fat globules from the surround-
" ing membrane. In other words, in view of the rapid
" working which seems to be characteristic of the Ameri-
" can patent, there no longer exists the necessity for such
" a thorough and complete washing as was necessary in
" the foreign patents, and therefore, to my mind, the com-
" plete crushing with complete bruising of all the cells,

" can have no other significance than a mechanical libera-
" tion of the fatty matter from the connective tissue, and
" from the cell-wall by which it is naturally surrounded.

" In other words, there is, to my mind, so far as the
" separation of the fatty matter is concerned, a substantial
" equivalency between the complete crushing of the
" American patent and the coarse crushing coupled with
" the action of the digestive mixture in the foreign
" patents.

" Referring now to the second section of the foreign pat-
" ents, namely, that of artificial digestion, and comparing
" it with the third section of the American patent, I find
" at once very decided differences, both in the nature
" of the processes specified and in the character of the
" products obtained. In only one of the foreign patents,
" namely, the Bavarian, do I find any definite statement of
" the proportion of artificial gastric juice to be employed.
" In this one instance I find the following exact statement
" as an alternative: 'or to one thousand kilos of fat 300
" kilos of water, one kilo bicarbonate of soda and two
" stomachs.' This mixture, while an utterly preposterous
" one, so far as any digestive action is concerned, owing
" to the fact that the active ferment contained in the
" stomachs is wholly inactive, and even destroyed in the
" alkaline fluid, still gives us a definite statement of the
" percentage amount of water to be employed in propor-
" tion to the fatty tissue; or, in other words, that the in-
" ventor considered at least thirty per cent. of fluid to be
" necessary for the proper carrying out of this digestion.

" If, however, the process of artificial digestion be car-
" ried out as specified in every other instance in the for-
" eign patents, namely, adding sufficient gastric juice
" (made from the stomach of a pig or sheep in acidulated

" water), ' to the fat to the extent of immersing it com-
" pletely,' it will be necessary to employ, as I have found
" by direct experiment in two instances, sixty-four to
" sixty-seven per cent. of such fluid.

" Following the description of the foreign patents still
" further, I find it specified that the mixture of fatty matter
" and artificial gastric juice is to be ' kept at the tempera-
" ture of the animal body, until the fat appears in a clear
" layer on the surface.' Comparing, now, the first portion
" of the third section in the American patent, I find, in
" which it specified that two liters of the artificial diges-
" tive mixture are necessary for one hundred kilogrammes
" of fatty matter; or, in other words, two per cent. of the
" digestive mixture. This proportion of digestive mix-
" ture, compared with the foregoing statements, concern-
" ing the foreign patents, indicate to my mind very plainly,
" at least two decided differences, which appear to me to
" constitute a very decided improvement in the American
" patent. In the first place, it is a point well understood
" in physiological chemistry, that the action of water or
" weakly acid fluids at the temperature of the animal
" body, tends to convert all aqueous matter of connective
" tissue into a body or bodies akin to glue or gelatine.
" Thus, in following out the specifications of the foreign
" patents, where the fatty matter, with its admixture of
" fibrous tissue is exposed to the action of such a large
" quantity (from thirty to sixty-seven per cent.) of fluid at
" about 100° Fahrenheit, I should expect to have developed
" and retained by the fatty matter deleterious products,
" thus rendering the latter exceedingly objectionable for
" any delicate use. Moreover, from my general knowledge
" of the fatty bodies, I should hardly expect to find the
" fatty matter liberated from its surrounding tissue by the

"action of the artificial gastric juice, to take on the ap-
"pearance called for in the foreign patents, when heated
"only at the temperature of the animal body, which as is
"explicitly stated by the foreign patents, is the tempera-
"ture to be employed.

"My opinion, on both of these two points, has been fully
"substantiated by the results of the experiments carried
"out at the manufactory in Brighton, in attempting to fol-
"low the description of the foreign patents.

"Thus, in the two experiments with one hundred and
"ten pounds of coarsely divided fat, in each case mixed
"with sixty-four and sixty-seven per cent. of an artificial
"gastric juice, respectively, the mixtures were heated
"continuously at the temperature of the animal body, in
"one instance for eighteen hours, and in the other from
"twelve to thirteen hours, without obtaining in either
"case any evidence whatever of a clear or limpid oil ap-
"pearing as a clear layer on the surface.

"The gastric juice employed was of standard strength,
"containing nearly two-tenths per cent. of hydrochloric
"acid, and prepared from the mucous membrane of a
"pig's stomach. That the juice in question was exceed-
"ingly active and well adapted to the purpose, I proved
"by testing the digestive action of the fluid on a quantity
"of well washed blood fibrine. Consequently the failure
"to obtain a clear and limpid fat, as called for in the
"foreign patents, could not be due to the lack of suitable
"artificial gastric juice. In fact, the appearance of the
"fatty matter in these two experiments showed plainly
"that the gastric juice had effected the purpose for which
"it was probably intended; the connective tissue ap-
"peared wholly removed; the membranous covering of
"the fat cells cells appeared wholly dissolved; the fat itself

"floated on the top of the mixture as a thick pasty mass, "in what I should consider a semi-molten condition, but "without any approach whatever to the appearance of a "clear, limpid layer.

"Furthermore, at the end of this time, the fatty mass "had no taste or odor resembling that of molten butter. "On the contrary, there was distinctly perceptible a semi-"glue like, meat like odor and taste, such as I should "expect might be formed from the long continued heating "at the temperature of the animal body with such a "quantity of fluid.

"The only action which I can conceive the gastric juice "to have, as employed in the foreign patents, is simply to "aid the liberation of the fat which was scarcely if at all "affected by the coarse crushing, inasmuch as it is a "point well understood by physiological chemists that the "gastric juice itself has no specific action whatever on "the contents of the fatty globules. In this sense, then, I "cannot but consider that the digestion with artificial gas-"tric juice called for in the foreign patents, has for its sole "aim the simple liberation of the contents of the fat glob-"ules, and since this can be accomplished in the coarsely "crushed fat only by the aid of an active gastric juice in "large quantity and by long continued action. Therefore, "any mechanical process which could accomplish the same "purpose without the admixture of fluids liable to produce "any deleterious results, would constitute an important "improvement, and would, at the same time, so far as the "final result is concerned, be a substantial equivalent; and "this, to my mind, constitutes one of the important im-"provements of the American patent, in which the action "of the artificial digestive mixture is reduced to a minimum "and occupies an exceedingly subordinate position, owing

"to the more complete mechanical liberation of the con-
"tents of the fatty globules.

"That this is the case is evident when we compare the
"two per cent. of the digestive mixture employed in the
"American patent, with the thirty to sixty-seven per cent.
"needed in carrying out the foreign patents, and likewise
"remember, that in place of the active acidulated water
"called for in the foreign patents, we have substituted in
"the American the much less active bi-phosphate of lime.
"In the latter half of the third section of the American
"patent I find what constitutes, in my opinion, one of the
"important improvements of the American patent, and
"which, taken in conjunction with the small amount of
"digestive mixture employed, namely, two per cent.,
"admits of the successful obtaining of a clear and limpid
"fatty product, free from the deleterious matter which
"must necessarily be characteristic of the product ob-
"tained by following out the foreign patents.

"Thus, in the third paragraph of the American patent
"referred to, after having described the melting of the fat
"by means of an artificial digestion, so that the heat does
"not exceed 103° Fahrenheit, I find it stated 'he slowly
"raised the temperature to about 103° Fahrenheit so that
"the matter shall completely separate.' According to my
"opinion, based on the wording of the patent, and on my
"experience in carrying out the process, the inventor in-
"tended to convey the impression that, having crushed the
"fat so as to completely bruise all the cells, thereby liber-
"ating, to a great extent, the contents of the fatty glob-
"ules, and then having melted the fatty matter in the small
"quantities of weak digestive mixture at the temperature
"of the animal body, namely, at a temperature not to ex-
"ceed 103° Fahrenheit, he then slowly raised the temper-

"ature until the fatty matter completely separated as a "limpid layer; the whole process consistent with the ob- "taining of the desired result to be carried out, at a tem- "perature as near as possible to 103° Fahrenheit.

"An experiment carried out at the manufactory in "Brighton with two hundred and forty pounds of fatty "matter, yielded, as a result, at 120° Fahrenheit, a clear "oily like layer, without taste of tallow or crude fat, "without the objectionable features noticed in the semi- "molten fat obtained by the foreign patents; in fact, with "all of the physical properties of molten butter.

"Before leaving this discussion of this section of the "American patent, I find in the description itself still other "evidence, in my opinion, that the complete crushing called "for in the American patent was intended to supplement "the action of the artificial gastric juice of the foreign "patents. At the end of the third section of the Ameri- "can patent is the sentence: 'The separation is well made "and the organized tissues which do deposit are not "altered.' To my mind there are two possible interpreta- "tions of this sentence; one is, that Mége intended to "convey the impression that the organized tissues so de- "posited are not putrid or decomposed, which examina- "tion would appear to my mind wholly useless and un- "called for, especially in view of the fact that he has pre- "viously stated that by his improved method of complete "crushing, he obtains rapid work. The only explanation, "therefore, that seems to my mind at all tenable, is that "by the American improved process the complete crush- "ing has so far supplemented the use of the artificial "gastric juice that but little, if any, peptonizing action "takes place as far as the organized tissues are concerned, "and therefore they settle out wholly unaltered at the end

"of the rendering. Such an opinion as this might seem "to involve a selective action on the part of the weak "digestive mixture; this, however, in my opinion, is but "partly true. I consider that by the process of complete "crushing a large number, at least, of the fatty globules "are ruptured and the fatty matter liberated; those, how- "ever, which are not, owing to the extreme thinness of "their limiting membrane, are easily affected by the diges- "tive mixture, and inasmuch as the fatty matter has been "so thoroughly pulverized by the grinding action, large "masses of cells are not to be considered as existing. It "appears to me, therefore, quite possible that the thin- "walled membrane surrounding the unbroken fat glob- "ules, might be sufficiently dissolved to admit of the liber- "ation of their contents without the more compact and "fibrous connective tissue which exists more in the shape "of bundles and trabeculae, being but little, if any, affected "by the weak digestive mixture specified in the Ameri- "can patent.

"Referring now to the third section of the foreign pat- "ents, namely, that of cooling in the Bavarian patent, or "of pressure in the English and Austrian patents, I find "it specified that 'the fluid fat (I quote the Bavarian) is "poured into vessels which have an opening at the bottom, "and contain a layer of tepid water. They are covered, "and when crystallization has occurred in consequence of "cooling, the water is drawn off through the opening, the "vessel is inverted and the cake is allowed to fall on a "table.' This I find to be the substantial method of op- "eration in all of the foreign patents.

"As I understand it, therefore, it is the aim of the for- "eign patents to obtain a complete solidfication of such "fatty products as may have been obtained in sections one

"and two. That entire solidification is intended is plainly "evident from the statement that 'the cake is allowed to "fall on the table.' This is still further evident from the "fourth section of the Bavarian patent, or the latter half "of the third section of the other foreign patents, in which "it is stated (I quote the Bavarian) that 'the cooled fat "is cut into slices about one inch thick.' In the other "foreign patents the statement is practically the same, "except that the fat is 'cut into pieces about half an inch "thick.'

"Comparing now the fourth section of the American "patent, called 'Crystallization in a Mass,' I find a very "decided difference in the method of procedure, which to "my mind would tend most decidedly to alter the charac-"ter of the ultimate product.

"Thus it is stated in the American patent, section 4: "'He contrived for this purpose the following method "which produced a very perfect separation, and is as fol-"lows: He rendered the molten fat in a vessel, which "must be sufficient for containing it. This vessel is "placed in a wash-tub of strong wood, which serves as a "water-bath. In this wash-tub he put water at a tem-"perature of 86° F. for the soft fat proceeding from the "slaughter houses, and 98° F. for the harder fats, such as "mutton fat. Afterward the wash-tubs are covered, and "after a certain time, more or less long according to the "fats, stearine is deposited in the form of teats at the mid-"dle of the oleomargaric liquid.'

"This, as I understand it, is a plain and definite state-"ment to the effect that a crystallization of the stearine is "intended at a temperature well defined, namely, 86° F., "or thereabouts, while the oleomargarine remains as a "liquid oil.

"Contrasted then with the foreign patents, the two pro-
"cesses are exceedingly unlike; the one, namely the for-
"eign, calls for a complete solidification of both the stea-
"rine and the oleomargarine, while the American patent
"distinctly specifies a crystallization of the stearine from
"the liquid (italics are mine) oleomargarine oil, and this
"I consider as a very essential improvement when taken
"in conjunction with the next step in the process. Con-
"tinuing our comparison of the foreign and American
"patents, I find it further stated in section 3 of the English
"patent, referring to the pieces half an inch thick cut
"from the solid cake obtained in the solidification of the
"fatty product, 'these pieces are wrapped in cloth and put
"in a press between hot plates.' Further, in the Bava-
"rian patent, I find a similar statement as follows, refer-
"ring to the slices of fat 'and put into a cloth between
"hot plates of a press. The portion which runs off is a
"mixture of margarine and olein, resembling lard in com-
"position, and of about the taste of fresh butter; it melts
"in the mouth like butter, and does not stick to the pal-
"ate like beef fat; the solid residue taken from the cloth
"is good stearine.' These two quotations, which plainly
"indicate the character of the process employed in the
"foreign patents for the separation of the oleomargarine
"oil from the stearine, are to my mind wholly inconsistent
"with the obtaining of a product free from that amount
"of stearine necessary to render it at all palatable, or
"adapted to the delicate purposes for which oleomarga-
"rine is used.

"This opinion I base in part upon my general knowl-
"edge obtained by experimental work in the laboratory
"of the behavior of the various fats when exposed to
"different degrees of heat.

" It appears to me wholly impracticable to obtain an " oleomargarine oil free from that amount of stearine " necessary to remove the character of tallow, by carrying " out the processes specified in the sections of the foreign " patents 'cooling' and 'pressure,' since in my opinion " any attempt to express a liquid oil from a solid cake " composed of an intimate mixture of stearine and oleo- " margarine by pressure between hot plates would be " followed by an unequal liquefaction; or, in other words, " in my opinion the outside portions of the cake, that is, " those most closely in contact with the heated plates, " would be entirely melted, and thus any exact separation " of stearine from the oleomargarine could hardly be " effected.

" One of two things would certainly follow, dependent " upon the temperature employed—either a small yield " of so-called oil would be obtained, representing that " portion obtained by the melting of the outer portions of " the cake, or else a large yield, as when a higher tem- " perature is employed for a more complete melting of " the cake. In both cases, however, the resulting prod- " uct would, in my opinion, necessarily contain such an " amount of stearine as would render it unpalatable as an " article of food.

" Theoretically, it might perhaps be considered that " the oleomargarine, with its lower melting point, might " be pressed out, leaving the stearine behind as a solid " mass; but in this connection it must be remembered " that the oleomargarine and stearine according to the " specification of the foreign patents, are intimately mixed " both in a solid condition, and thus any attempt to remove " the more easily melting oleomargarine must necessarily " be followed by the melting of a certain amount of the

" stearine, more or less, according to the temperature,
" which cannot but render the oil unfit for the purpose
" for which it was intended. That this opinion is a con-
" sistent one, is plainly indicated by the following experi-
" ments tried by myself in conjunction with Professors
" Morton and Wheeler. A quantity of recently rendered
" oil was allowed to stand in a so-called seeding can until
" the oil contained in it was in the condition of a solid
" cake, namely, the condition called for in the foreign
" patents.

" The seeding can was then inverted, and the mass
" allowed to fall into a large box; that it was in the con-
" dition called for by the foreign patents is evident from
" the fact that it preserved its form, appearing like a
" cheese or a cake of hard butter. I marked upon its
" upper surface, with the aid of a rule, divisions half an
" inch in width; with this as a guide, slices half an inch
" or more thick were cut. These were wrapped up in
" cloths and placed in a press upon and between warm
" plates.

" The plates had been previously immersed in water,
" having a temperature of 125° F. Before pressure
" could be applied, however, the radiation of the heat was
" such that the temperature of the plates could, in my
" opinion, hardly have reached a temperature of 90° F.

" In this experiment, however, even at this temperature
" in which the plates could hardly according to the usual
" interpretation of the word be termed warm, since it
" must be remembered that we form average estimate of
" temperature by the touch, and that the body tempera-
" ture is about 100° F. In this experiment I say
" the character of the resulting oil was such as to plainly
" indicate even at this temperature the effect of the

"slightly warmed plates. The percentage of oil obtained "was eighty-three and four-tenths per cent., the per- "centage of stearine sixteen and six-tenths per cent., "being from two to three per cent. less stearine and "more of oil, than was obtained by another of our ex- "periments with plates at the temperature of the room, "which latter result agrees substantially with the general "average of the results obtained at the Commerical "manufacturing establishment in Brighton, as was evi- "denced by their book of averages shown me by the super- "intendent. The most striking evidence, however, of the "effect of the warm plates was the character of the re- "sulting oil as mentioned above. That it contained a "larger percentage of stearine than usual, was evidenced "by the fact that as the oil flowed out between the warm "plates and fell upon the cooler ones, it would impart, "solidify and to the palate gave evidence of the stearine. "Another experiment similarly conducted gave a like re- "sult namely, sixteen and eight-tenths per cent. stearine, "and eighty-three and two-tenths per cent. of oil. A third "experiment similar to the preceding in every respect, "except that the iron plates had been previously immersed "in water, heated to a temperature of 155° F., gave a "still more striking illustration of the influence of tem- "perature on the resulting product. In this instance, in "which in my opinion the plates at the time of pressure "must have had a temperature of from 100° F. to 110° "F., there remained in the press at the end of the opera- "tion but five and twenty-six hundredths per cent. of the "stearine, while ninety-four and seventy-four hundredths "per cent. of the fatty matter had been removed. This "product which would represent according to the specifi- "cations of the foreign patents, the oleomargarine oil,

"had to the palate a decidedly granular character and "gave still other evidence of the presence of a large per- "centage of stearine by the fact that this so-called oil "solidified at a temperature of ninety-five degrees, while "oil previously made was still fluid at 91° F., the tem- "perature of the room being 89° F.

"These experiments plainly uphold me, to my mind, in "the belief already expressed that the combination of en- "tire solidification followed by pressure between hot "plates, is an impracticable method for the obtaining of "an oleomargarine oil suitable in any respect for delicate "uses.

"(In the second experiment above quoted I omitted to "mention that the slices cut from the cooled cake were "not made with so great degree of care as to thickness, "being from half an inch to an inch or more thick).

"Moreover, to my mind, either one of the two meth- "ods, namely, that of complete solidification or pressure "between hot plates introduces a very decided obstacle in "the obtaining of an oleomargarine oil, suitable for deli- "cate purposes on a commercial scale. It is, therefore, in "my opinion, very plainly evident that section four of the "American patent, namely, 'Crystallization in a mass' "constitutes a very decided improvement in the Ameri- "can patent as compared with the foreign, and taken in "conjunction with section fifth of the American patent, "together with the American patent, a workable process "and one capable of yielding a final result devoid of the "taste of fat and free from the objectionable excess of "stearine, which to my mind must necessarily be charac- "teristic of the final result of the foreign patents.

"In section five of the American patent I find it stated: "'He caused the mixture of stearine and oleomargarine to

"flow into a centrifugal machine, called 'Hydro Extrac-
"tor;' the greasy liquid passes through the cloth and the
"stearine is collected, when all the liquid is passed he put
"the machine in motion and the crystals of stearine are
"entirely exhausted without the auxiliary of the presses.
"However, during certain seasons there are animals
"which produce crystals of stearine soft enough for ren-
"dering necessary the stroke of the press as a last opera-
"tion.'

"Now it is a well known fact, that a centrifugal ma-
"chine and a press accomplish the same result, and that
"the one may be used for the other according as the one
"or the other may be more convenient. This in my own
"experience in the laboratory, the separation of hemo-
"globin crystals, for example, of the blood are separated
"from the plasma or cerum by either a centrifugal or
"press, so that to my mind the one is the equivalent of
"the other.

"If now we compare the fourth and fifth sections of
"the American patent, namely, crystallization of the stear-
"ine from the liquid oil, and then separation of the latter
"by either centrifugal or press at about the temperature
"of crystallization, namely, 86° Fahrenheit; I consider
"it, both on theoretical grounds and as a result of actual
"experiment, a very decided improvement in the charac-
"ter of the product obtained, and in the nature of the
"process in every respect different from the product and
"process of the foreign patents.

"An experiment to demonstrate fully the working of the
"fourth and fifth sections of the process of the American
"patent, and the character of the resulting product was
"tried at the manufactory in Brighton in conjunction with
"Professors Morton and Wheeler. The rendered oil was

"drawn off from the setting kettle into a seeding can at a "temperature of 132 and five-tenths degrees F. It was "then placed at once in a room and left all night under "the care of a watchman, which room was ordered to be "kept at a temperature of from 84° to 86° F. On the "next morning I personally took charge of the room in "which the can stood and saw that the room during the "entire day was kept at a temperature of from 84° "to 86° F. The following data give evidence of the "care which was taken and also of the slight variations "in the temperature of the room:

TIME.	TEMPERATURE.
"8:10 A. M.	86° F.
"8:30 "	86° "
"8:45 "	85.5° "
"9 "	85.5° "
"9:10 "	85.5° "
"9:20 "	85.5° "
"9:30 "	85.6° "
"9:45 "	85.8° "
"10 "	85.8° "
"10:10 "	85.8° "
"10:20 "	85.8° "
"10:30 "	85.8° "
"11:40 "	85.5° "
"12:20 P. M.	85.2° "
"1:10 "	85.0° "
"2:40 "	86.0° "
"5:15 "	86.0° "

"Standing at this temperature undisturbed, a fine crys- "tallization of the stearine took place, while the oleo- "margarine remained as an oil liquid. When crystalli- "zation of the stearine was deemed complete, the entire

" mass was stirred up with a paddle, the mixture of fats " having the appearance of a thin mush, showing in this " respect a very decided difference from the entire solidi- " fication of the foreign patents.

" This semi-fluid mixture of stearine crystals and oleo- " margarine oil was taken up in a scoop ladle, small por- " tions at a time placed upon cloths, which were in small " boxes to receive it, since the fatty matter was too fluid " to have any form of its own, then wrapped in the cloths " placed upon the plates of the press and subjected to a " pressure of three hundred and sixty-five tons to the " square inch.

" Carrying out this experiment in the manner described, " we obtained eighty and one-half per cent. of oil while " nineteen and one-half per cent. of stearine remained, " being retained in the form of a white cake in the cloths " between the iron plates of the press.

" The oil so obtained was free from all objectionable " features, being devoid of all odors or tastes character- " istic of the greasy fats, and was in all respects, so far as " could be observed, similar in its character to molten " butter.

" Having now compared those sections of the American " patent which have to do with the preparation of the " oleomargarine oil with the corresponding sections of the " foreign patents, I now state, that the process specified " in the above five sections of the American patent differs " most decidedly in its nature from the process contained " in the foreign patents, and that the resulting product, " namely, the oleomargarine oil, obtained by the American " patent, is totally different in character from the product " obtained by the use of the foreign patents.

" This difference in the nature of the process I find to

" apply not only to the process in its entirety, but also to " the individual steps of the process, as follows: The first " section of the foreign patents I find to be designed solely " for the complete washing of the fat, while the corre- " sponding section of the American patent, that is, the " second, I find to be designed for the mechanical libera- " tion of the contents of the fatty globules. The second " section of the foreign patents I find to be designed for " the liberation and melting of the contents of the fatty " globules, while the corresponding section of the foreign " patents, that is, the first part of the third, I find to be " designed for the liberation of the contents of such of " the fatty globules as have not already been broken by " the complete bruising, of section two, and further, for " the melting of such liberated fatty matter, but the lat- " ter under such condition (already specified) as materi- " ally modifies the character of the resulting product. " The latter half of the third section of the American " patent I find to be designed for the complete separation " of the fatty matter as a perfectly limpid liquid, a pro- " cess wholly wanting in the corresponding section of the " foreign patents. The fourth section of the American " patent I find to be like the latter half of the third sec- " tion—a substantial addition to the foreign patents, " which, in part, tends to give to the product of this " American patent its peculiar properties. The fifth sec- " tion of the American patent, constituting the last in the " preparation of the oleomargarine oil, I find, likewise, to " be decidedly different from the corresponding section " of the foreign patents, the pressing with hot plates, " characteristic of the latter, being decidedly deleterious." (Rec., 283–294.)

The Third Step of the Mege American Patent not a "Physiological Process."

It will be remembered that Prof. Barker, in answer to question 5, stated that the third step of Mege was a "physiological process," and in such step resided all that there was to the Mege invention.

The question of the character of the process of the third step of the Mege American patent was presented to Prof. Chittenden; his peculiar branch of study being, and his chair of professorship in the Yale University relating, particularly to physiological chemistry.

Professor Chittenden took up this assertion of Prof. Barker and contravened it, giving his judgment that the process of the third step of Mege was purely chemical and mechanical, and not in anywise a "physiological process." The entire testimony of Prof. Chittenden on this point being quoted, viz.:

"In my opinion the process of Mege for treating ani-
"mal fats, in order to obtain oleomargarine oil as specified
"in the first five sections of the American patent, re-issue
"No. 10,137, can in no sense of the word be termed
"a physiological process; neither is it to my mind essen-
"tially a digestive process; it certainly cannot be con-
"sidered by any unbiased person familiar with the indi-
"vidual steps of the process, who has witnessed the
"manufacture of the product on a commercial scale, and
"examined the results of each step, that the third section
"of the American patent, namely, that of 'Concentrated
"Digestion' is the main feature of the process, or that the
"other steps are merely collateral. While Mege in the
"first part of his specification, states that his invention is

"the result of physiological investigations, it does not "necessarily follow that the process specified in his pat- "ent is a physiological process. If we analyze the first "five sections of the American patent, we do not find "that in obtaining the oleomargarine oil, the third "section above suggests anything akin to a physiological "process. It is a point, however, well understood among "students of physiological chemistry, that a physiological "process is a process incidental to and characteristic of "a living organism under normal conditions. A phys- "iological process is, to my mind, inseparably connected "with life, and without life, the process is no longer phys- "iological. Webster, in his dictionary, defines physiolog- "ical as 'pertaining to physiology, relating to the science "of the properties and functions of living beings.'

"Worcester, in his dictionary, defines physiology as "'the science of life or the phenomena of living bodies.' "While the Imperial dictionary, the standard authority of "Great Britain, defines physiological 'as pertaining to "physiology,' and the latter as 'that science which has "for its aim the study and elucidation of the action and "process incidental to and characteristic of the living "state, whether in plants or animals.' It is difficult, "therefore, to see how in the light of these definitions, a "digestion carried on in an iron kettle, and with a digestive "mixture prepared from the dead stomach of a pig or "sheep, can be termed a physiological process. Further, "it is to be noticed that the gastric juice called for in the "American patent is prepared not by the aid of a dilute "hydrochloric acid solution, as is customary when it is "desired to prepare an artificial gastric juice as similar "to the one occurring in the body as possible, but instead, "with the aid of bi-phosphate of lime, making thereby a

"mixture which, while possessed of peptonizing power, "and without doubt better adapted to the purpose Mege "had in view, still does not accord as closely in composi- "tion with the natural digestive mixture as when prepared "with the above mentioned acid. In addition, the di- "gestive mixture specified in the American patent does "not, so far as I know, accord in composition with any di- "gestive mixture occurring in nature. If any further "data be required to strengthen my opinion, that the "process in question is not a physiological one, but a "purely chemical one, we have the statements of Profes- "sor Maly in Herman's Handbook der Physiologie (a "book of the highest standing, published in Germany in "1883), 5th volume, page 37, to the effect, as I translate "it, 'gastric digestion is a purely chemical process, which "can succeed also outside of the organism in a vessel of "quite a different character, and even more completely than "in the living stomach on account of the lack of time in the "latter case; there being in the case of human beings and "carnivorous animals, no noticeable mechanical act of diges- "tion, that is, no noticeable work of trituration.' Further, A. "Meyer, a well known investigator on the subject of fer- "mentation, as quoted by Dr. Ewald, lecturer in the Royal "University of Berlin, on page 8 of his lectures on diges- "tion, says 'that a number of chemical processes, not ex- "plicable according to the rule of affinities, owe their "occurrence to the presence of certain matter which is "not recognizably concerned in the reaction, and the "quality of which stands in inordinately small relation to "the magnitude of the chemical processes caused by it,' "meaning thereby processes of fermentation such as occur "in the stomach and intestinal canal. Again, Dr. Ewald "himself, in his small book above cited, says (page 8):

"'We may consider it a fact not quite universal, but yet "certain, so far as all fermentations in animal bodies are "concerned, that fermentations in the presence of water "and the ordinary body temperature gives rise to extens- "ive chemical processes with the smallest quantity of fer- "ment.' (The italics in both above quotations are my own.) "I, therefore, reiterate it as my opinion, that the process "involved in the third section of the American patent is a "purely chemical process, in which the ferment, pepsin, "in the presence of the acid mixture resulting from the "bi-phosphate of lime, acts upon the albuminous matter of "the connective tissue and of the membranous covering "of the fat cells, converting it in part, at least, into soluble "bodies, thereby assisting in the liberation of the fat, and "I hold that the above quotations support me in the view, "that the above process is purely chemical and not phys- "iological in its character."

In all candor, without prejudice and without clamor, we most respectfully submit, that the foregoing depositions of the distinguished scientists here presented, make certain the fact that neither of the foreign patents, exhibits of defendants, contain, intimate or suggest the process of the first five steps, or the resulting product therefrom, of the Mege American patent in suit; and that the decision of Judges Gresham and Blodgett finding otherwise, is manifest error.

Inherent Evidence of the Worthlessness, practically and commercially, of each of the processes of the Mege Foreign Patents.

We desire further, in connection with this most all important branch of the case, to earnestly call the attention

of your Honors to this pregnant and suggestive fact, viz: that there is not a sentence of proof in this record, to the end and effect, or suggestion, that either or any of the foreign patents were ever put to any practical test, or obtained any useful result whatever, or that they were anything more than lifeless paper patents, containing mere speculative theories, and as such do not represent any valuable invention. So worthless in fact were two of these patents, the Austrian and Bavarian, that they died within a year or two of their conception; *and there is no evidence that a pound of any product was ever made under the supposed inventions or expositions of these foreign patents, or that the process for producing an alleged product was ever followed under either of said patents for a day's duration of time.* The value of such patents and their right bearing upon a valuable, real and practical invention, is surely a rightful subject for consideration.

In the case of *Tilghman* v. *Proctor*, 102 U. S., 707, where a number of foreign patents were introduced in evidence as containing the same invention as Tilghman, this Court states in deciding the weight to be given to such patents, viz: "*It was not shown that this process* "*was ever called into successful operation prior to Tilgh-*" *man's patent.*" And upon page 712, still following the same line of reasoning and conclusion, state in referring to the Manicler 1826 patent: "But we have no evidence "that the process was ever successful in practice. One "of the defendant's witnesses testifies, that he tried it, "and though he got some results, he adds this pregnant "observation: 'To transform all the fat in this way at "so low a temperature would have required many days.' " * * * Evidently therefore, this was an abandoned "experiment, since we never hear any more of it from "1826 down to the trial of this cause."

Again in the case of *Consolidated Valve Company* v. *Crosby Valve Company*, 113 U. S., p. 179, this Court indicated the same line of conclusion and thus so expressed: "Richardson's invention brought to success what prior "inventors had assayed and partly accomplished. He "used some things which had been used before, but he "added just that which was necessary to make the whole "a practically valuable and economical apparatus. The "fact that the known valves were not used, and the "speedy and extensive adoption of Richardson's valve, "are facts in harmony with the evidence that his valve "contains just what the prior valves lack, and go to sup-"port the conclusion at which we have arrived on the "question of novelty."

In the case of *Hammerschlag* v. *Scamoni*, 7 Fed. Rep., 592, 593, the Court states: "It is quite clear from the "history of the article made by the plaintiff's machine "and process, that the article was not capable of being "made by any machine or mechanical process before "made known. The article existed before, and was a "very desirable article, but it was made by hand, and "was too expensive for general use. * * * "Making it cheaper and of better quality has caused it to "be applied to many new cases, and *in fact created a new "branch of industry.*"

"The defense of foreign patents which are set up as "anticipations, may be met by showing their worthless-"ness."

Harwood v. *Mill River Woolen Mfg. Co.*, 3 Fisher, 526.

Defendants Dernier Resort.

After defendants had taken their sur-rebuttal testimony and the case closed, the defendants obtained leave, upon extensive affidavits filed, to put in certain testimony relating to certain alleged experiments made by persons asserted to be practically familiar with oleomargarine and the process of its production.

Defendants alleging that they could show practically that the experiments, opinions, and the conclusions of science testified to by complainants' experts were in part erroneous and without justification in fact. This was permitted in the court below, the court, however, conditioned therewith the right to reply on the part of the complainants and a limitation as to time. Defendants then called several witnesses to the alleged experiments made in their behalf, these experiments and the witnesses with one unimportant exception, being conducted and carried on in their own factory in Chicago and without the presence of parties other than such persons testifying. The parties giving such depositions are George Fitzmorris, Gilbert A. Peck, John H. Fitzmorris, Thomas Whalen and John H. Hartog. The principal deposition given, however, and upon which defendants rely, is that of Mr. Gilbert A. Peck, the foreman of defendants, the others with the exception of Hartog, being simply workmen in special departments. The entire and sole point to these depositions is to the effect that oleomargarine stock of soft fats can be seeded or granulated at a point of temperature much below that expressed in the Mege patent, viz.: at about 80° or 81° (C. Q. 88, 89, Rec., 432), and that such oleomargarine stock

so granulated or seeded can then be chilled or solidified so as to be cut into thin slices, and then have the oil and stearine separated by means of warm plates in a press as provided for in all the foreign patents. Mr. Peck testified that this can be done, and that he or his workmen by his direction did do it (pages 418–438 Rec.), there being no difference between the steps taken by Peck in making these experiments, and the ordinary process of complainants and defendants, as shown by the stipulation and testimony, except that Peck professed to seed the eleomargarine stock at a much lower temperature than that provided for in the Mege patent, and then solidified it and separated the oil and stearine by pressure between warm plates, both of which operations complainants' experts had attempted, and which, from the standpoint of scientists accompanied with practical confirmation, testified could not be done.

There are several reasons why the professed experiments related in the testimony of Mr. Peck should not weigh or be considered for a moment as a reliable controversion of the eminent gentlemen whose testimony has been heretofore given. Principally such reasons are:

1st. Because Peck is of necessity a willing witness, and prejudiced in favor of defendants on account of his relation with them.

2d. Because Peck was formerly in the employ of these complainants (C. Q. 43, p. 423 Rec.), and evidently left the employ under circumstances which engendered his ill-will in relation thereto (C. Q. 50, Rec., 424), and was discharged from the employment of the complainants. (Q. 51, Rec., p. 424.)

3d. Because he testified that under the above experi-

ments made by him sixty per cent. of pure oleomargarine was obtained by him from one solidified seeder, while the contents of the second seeder portion was not *pressed, but put back in the kettle and remelted with the raw fat.* (C. Q. 128, p. 436, Rec.)

4th. Because, in the alleged experiments made by Peck, no such care or watch was taken or such proceedings had as would prevent the tampering with the material; for example, the introduction of pure oleomargarine oil into the same, from which the stearine had been expressed.

There are also several fatal admissions or statements in the deposition of Mr. Peck, which prove conclusively that the process, as used by him, and supposed to represent one at least of the steps of the foreign Mege patents, would not commercially admit of its employment in the production of oleomargarine oil.

1st. Because of the great length of time it takes to cool the product to solidification to be cut, and the difficulty of cutting the same.

2d. Because of the impossibility of pressing but a small installment of such chilled product at a time.

3d. Because it takes three hours to press ninety-one pounds of chilled stock, (C. Q. 101, p. 434, Rec.), and only between one and two hours to press thirteen to fifteen hundred pounds of stock under the Mege American or defendant's process, (C. Q. 129, 131, Rec., p. 436), and it never could be done (Davis' Dep., Rec., p. 421, Q. 26).

4th. Because each of the foreign patents provides that the oleomargarine stock before the extraction of the stearine is to be run into vessels containing a layer of

water, to crystallize or seed; this practically would destroy the product, and is so stated by Peck, (C. Q. 111, page 435, Rec.), and all of complainant's practical witnesses testify that the slightest presence of water in the bottom of the crystallizer or seeder would destroy the product. The purest water in bottom of seeder will sour stock. (Q. 112 to 115, Rec., page 435.)

Mr. Peck also saw fit to go upon the stand after complainants had taken their practical testimony in reply to the above, and testified substantially that he had made experiments in seeding oleomargarine stock at about 80°, and again chilling it to solidification so as to be cut into slices and then pressing such stock between hot or warm plates at temperatures ranging from 80° to 136° (Q. 48, page 494, Rec.), always producing its requisite quantity and quality of prime oleomargarine oil.

We simply remark that nothing could better illustrate the recklessness, impudent and vicious disposition of this witness, than by the giving of this testimony, and that such testimony is so manifestly opposed to the entire record as made by both complainants and defendants that we do not consider it entitled to any further notice by counsel or court.

Mr. John Hartog was also called by defendant. His testimony is alone to the effect that he is an inspector of oleomargarine and was present at defendants' factory when the solidified stock was sliced up and pressed, and the result was prime oil. (Rec., 451, Q. 19.) Mr. Hartog was but twenty or twenty-one years old, and knew more then than he ever will again. (Rec., 450.)

Complainant's Experiments—Practical Witnesses.

Under the order of court complainants were permitted, and, as we understood the suggestion of the court, they were expected to also make practical tests by practical witnesses in reply to the depositions of Mr. Peck and his workmen; this was done somewhat at length, and the testimony so taken appears upon pages 302 to 365, complainant's record.

There were three sets of experiments made to meet the facts and conditions if possible set forth in the deposition of Mr. Peck; the first experiment was made at the factory of the National Dairy Company, Chicago, Illinois, a licensee of complainants; the second experiment at the factory of an oleomargarine company at New Haven, Connecticut, also a licensee of complainants; the third experiment being made at the factory of an oleomargarine company at Boston, another licensee of complainants. These three sets of experiments were made independrnt of each other, and without any understanding as to any desired uniformity of result.

Chicago Experiments.

The experiments made at the Chicago factory was under the charge of Mr. Joel C. Rockwell, an old oleomargarine manufacturer under the Mege patent in question, beginning in the year of its issuance, and probably no more competent person could be found for the experiments in question. Mr. Rockwell was assisted by Mr. James M. Davis, manager of the licensee corporation complainant, and long familiar with the production of oleomargarine. I shall not elaborate upon the testimony

of these witnesses, but shall state briefly the substance thereof with the identification reference thereto.

Joel C. Rockwell testified that he first manufactured oleomargarine at New Haven in March, 1874, under the Mege patent, and has been more or less familiar with its manufacture ever since (Questions 2, 3 and 5, p. 302, Rec.); that he has read the depositions of defendant's witnesses Fitzmorris and Peck and understands the same, and that he followed exactly and precisely, in all material respects, the experiments delineated by those witnesses, and kept memorandum of the same. Mr. Rockwell goes on to describe the different steps which he took, so that your Honors, if you so desire, can compare the same with the parallel steps taken by defendant's witnesses as to the same matter, using substantially the same devices and the same surroundings as used by Peck. Mr. Rockwell testifies that oleomargarine stock cannot be granulated or seeded so as to produce a practical and merchantable oleomargarine oil at the continuous temperature of 80° or 81°, this witness also testifying that oleomargarine stock cannot be chilled so as to be cut up into slices and afterwards obtain therefrom a merchantable oleomargarine oil extracted by pressure between hot or warm plates. (Question 28, p. 307.) The witness also gives the resulting product of the experiments made by him, following the testimony of Fitzmorris and Peck, such resulting product always being a mixture of oil and stearine not fit for butter purposes, or a merchantable quality of oleomargarine. (Questions 9 and 14, pp. 303–305, Rec.) Mr. Rockwell had the entire charge of these experiments, having the key to the room where they were conducted, and staying with and sleeping by the product in its various steps of preparation from the time

of the entrance of the fat into the kettle until the time of the last operation of the presses upon it. (Rec., 315; Questions 136 and 137.)

Mr. James M. Davis assisted Mr. Rockwell in these experiments, and had full knowledge of the operations and the details, he was present nearly all the time and kept notes of the various steps taken, and was perfectly familiar with the depositions of Fitzmorris and Peck. (Rec., 316.) Mr. Davis corroborates Mr. Rockwell in all material respects, giving in addition thereto the speed of the engine and power of the presses used, and acting upon the product, being the most powerful presses known to this industry. Mr. Davis testifies to the impossibility of seeding or granulating oleomargarine stock at a temperature no higher than 80°, and afterwards obtain therefrom a merchantable product of oleomargarine, also to the impossibility of obtaining a practical oil from oleomargarine stock chilled to solidification and then pressed between hot or warm plates. (Rec., 320; questions 20 and 21.)

New Haven Experiments.

These experiments were made at the factory of Mr. Nathan Easterbrook, Jr., proprietor of the establishment; an old oleomargarine manufacturer of eleven years standing, and familiar during that time with the Mége patent, process and product. Mr. Easterbrook had carefully read the depositions of Mr. Peck and Fitzmorris, and fully understood every step professedly taken by them in the production of oleomargarine oil, as delineated in their testimony. (Rec., 328.) Mr. Easterbrook states: "I "have followed the experiments as indicated in the depo-

"sitions of Mr. Peck and Fitzmorris faithfully, earnestly "and honestly, and duplicated them at my factory." (Questions 8 and 9, p. 330.) Mr. Easterbrook then goes on to state in detail carefully and at length his actions in following exactly the methods and process of Peck and Fitzmorris' experiments, and gives his results in detail therefrom, the result being a mixture of oleomargarine and stearine unfit for practical or commercial purposes.

Mr. Easterbrook testifying "that it certainly is not "practicable, and from his experience and knowledge not "possible to separate oleomargarine and stearine by "means of hot plates by pressure, no matter at what tem- "perature the oleomargarine stock has been seeded." (Question 18, p. 333, Rec.)

Mr. Easterbrook also testifying emphatically to the desirability and essentiality of temperature for seeding or granulating oleomargarine stock provided for in the Mege patent, and the impracticability and deleterious effect of attempting to seed or granulate oleomargarine stock at a point below that expressed in the Mege patent, viz:

"Q. 23. For the past eleven years what temperature "have you found it necessary to seed or granulate your "oleomargarine stock for pressing?

"A. At from 86° to 88° Fahr. has been the temper- "ature of our seeding-rooms.

"Q. 24. Is it practicable to produce oleomargarine oil "from stock seeded below 86°, say 80°, and get a suc- "cessful and merchantable quality of oleomargarine oil "therefrom, for food purposes?

"A. I consider it impracticable to produce a prime "merchantable article of oleomargarine oil from stock "seeded at 80° Fahr.

"Q. 25. What is done with oleomargarine stock in "actual practice if the seeding-room should drop to a "temperature of 80° and remain there long enough to "produce the effect of that degree of temperature on the "oleomargarine stock?

"A. It is put into the kettles, melted again, and seeded "at the temperature of 86° to 88° Fahr." (Rec., 333.)

We respectfully urge that the position, character, and high standing of Mr. Easterbrook, and his peculiar qualifications to give this deposition, should secure for such testimony unusual consideration.

HENRY M. SYKES was called by complainants. This witness was simply in corroboration of Mr. Easterbrook, under whose direction he worked; he had worked at the factory for seven years as foreman, and was perfectly familiar with the process and product of oleomargarine oil. (Rec., 348.) This witness backed up Mr. Easterbrook in all matters of which he had knowledge in conducting the experiments, and was principally valuable in showing the fact of the continuous untampered condition of the material being acted upon from the beginning to the end, he being present and watching the same during all the time. (Q. 9, p. 348, Rec.)

BOSTON EXPERIMENTS.

The experiments made at Boston were made without any reference to the depositions of Mr. Peck or Mr. Fitzmorris, and without any knowledge that any such experiments had been made. The Boston experiments were made under the direction and superintendence of Mr. Reuben U. Reed, superintendent of the oleomargarine manufacturing company near Boston; he is an old and

experienced manufacturer of oleomargarine, and conducted the experiments for his own satisfaction, and without the slightest expectation or intimation that he would ever be called as a witness in relation thereto, the incentive to such experiments being the fact that Mr. Reed's factory was the establishment where complainant's chemical expert witnesses conducted their experiments the year before, of which Mr. Reed had partial knowledge. The exclusive object of the Reed experiment was to ascertain whether practical oleomargarine stock, seeded, granulated and prepared in compliance with defendants' and complainants' process as proven here, could, by the most careful treatment, be pressed between hot or warm plates so as to produce a practical oleomargarine oil, if such stock had been solidified or chilled so as to be cut into slices. Mr. Reed gives the details of his experiments to ascertain this fact, and his unhesitating conclusion that no practicable or merchantable oleomargarine oil can be thus produced. (Rec., 358, Q's., 9, 10 and 11.)

Mr. Merrill and Mr. Pendleton assisted Mr. Reed in these experiments, and had full knowledge of the facts, and were ready to go upon the stand and corroborate Mr. Reed in every particular, but at this point defendants' counsel, for the purpose of saving time, admitted that both Merrill and Pendleton would give substantially the same testimony as Mr. Reed, and that the deposition of Mr. Reed might also be read as the testimony of Messrs. Merrill and Pendleton. (Rec., 196.)

We fail to appreciate the effect of human testimony independent of any scientific fact, if the depositions of complainant's witnesses last presented do not demonstrate beyond cavil or criticism four things:

1st. That oleomargarine stock produced as contained

in defendant's stipulation, as to their process, will not granulate or seed at any temperature except substantially in accordance with the expressed degree of heat in the Mége patent, in suit.

2d. That oleomargarine stock produced by the Mege process and the defendant's process can never be separated, the oil from the stearine, [if the same is permitted to be chilled or cooled to solidification so that it can be cut up into slices], by pressure between hot or warm plates.

3d. That the presence of water in the bottom of the seeder or crystallizer provided for in the foreign patents is fatal to the production of a salable oleomargarine oil.

4th. That even if it were in any manner possible to produce oleomargarine oil by the steps taken by Peck and Fitzmorris, such product would be commercially of no value.

As to these matters complainants rest.

Complainants' Proof of Infringement.

We now turn to the last problem of discussion contended for by these complainants, and without a favorable and assenting recognition of which, upon the part of your Honors, this record will be of little avail to them.

It is unhesitatingly asserted and insisted upon that the process followed by these defendants is substantially, and as an entirety almost identical with the process of the first five steps of the Mege patent in suit, and differing therefrom only in such unimportant particulars and variation as convenience might dictate, and that the product of the defendants' process is the precise and exact product of the

patent in suit, resulting from the employment of said first five steps. The defendants stipulated as to the process employed by them, such stipulation or admission being as follows, and additional to complainant's proof upon this subject:

Stipulation entered into between counsel, relating to the process, or method of manufacture, followed by the defendant, which stipulation is referred to in several of the depositions appearing in this record, p. 391.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

The Commercial Manufacturing Company, Consolidated, *et al.*, *vs.* Fairbank Canning Company. } *In Chancery.*

"It is hereby stipulated by and between the parties to "the above entitled cause, represented by their respective "counsel, and for the purpose of expediting the prepara- "tion and hearing of the above cause, as follows:

"That the defendant in its factory first runs the fresh "beef-fat, which has been packed with ice during the pre- "ceding night, through a hasher, where it is thoroughly "hashed, and is comminuted, and then melts the hashed fat "in a jacketed kettle at a temperature ranging from one "hundred and twenty degrees to one hundred and thirty "degrees Fahrenheit, the fat being thoroughly agitated by "mechanical stirrers while melting, and salt being mixed "with the fat while it enters the kettles, and then, when "settled, the melted fat is drawn off into other kettles, when "the temperature is raised about five degrees and main-

"tained about three hours, when the fat is put into seeders,
"which are kept in a room at a temperature of eighty-four
"to eighty-six degrees, until it granulates and thickens.
"Then the stock is put into cloths holding three pounds
"each, in a flat cake, seven by ten inches, and one inch
"thick. Eight of these are placed on an iron plate, and
"then an iron plate in alternation, to seventy-five rows of
"cakes and plates, and put into a press. Then the oil is
"squeezed out by pressure in the press and runs into a
"tank, from which it is pumped through pipes into a kettle
"in the same room and temperature, where it remains
"several hours, and is run into tierces.

"This stipulation does not prevent the consideration or
"introduction of evidence by either party, relating to the
"subject-matter thereof, not inconsistent with the contents
"hereof.

"That the complainants are to finish and complete at
"once, and at this sitting in New York, all their testi-
"mony, *prima facie*, and that the defendant is to use his
"best effort and endeavor to put in and complete its re-
"buttal within sixty days thereafter.

"NEW YORK, November 21, 1883.

"OFFIELD & TOWLE,
"*Compts. Solrs.*
"HILL & DIXON,
"*Defts. Solrs.*"

Prof. Morton in giving his deposition in complainant's case gave a concise, lucid and comprehensive statement and comparison of defendant's stipulated process with the first five steps of the Mege American patent, finding them, both as to process and product to be substantially identical each with the other, giving his reasons therefor as follows; the "summary" and "documents" referred to

in the answer being the above stipulation, and complainant's proofs.

"A. I have read the documents to which you refer, and "am of opinion that the process and product therein de- "scribed is the process and product of the Mege patent, "No. 10,137, of June 13, 1882. My reason for this "opinion is that I find in the document referred to, the "description of the preparation from animal fat of a greasy "product fit for use as a substitute for butter, by a pro- "cess which consists, first, in the rendering of fresh or "preserved animal fat at a temperature so low as to se- "cure in it an entire absence of fatty or tallowy taste; "and, second, in the separation from the above product "of a large part of the stearine therein contained, so that "the resulting oily matter shall have substantially the "composition and consistency of natural butter, and be "capable of being converted into a more perfect butter, "or into a product almost identical with natural butter "by the addition of substances affecting its flavor, con- "sistency and color; such a product as above described is, "in my opinion, the product described and claimed in the "Mege patent; and the process I have above indicated is, "in my opinion, the process set forth and claimed in the "said patent.

"Q. 21. Please answer the above interrogatory some- "what more fully in comparing the means or steps shown "in the Mege patent, with that described in the complain- "ants' exhibit copy infringement testimony and sum- "mary?

"A. With reference to the means employed, it is my "opinion that these, as described in the documents re- "ferred to and in the Mege specification, are substantial- "ly identical. Thus, in the Mége specification, it is di-

" rected to use water containing sea salt and sulphate of
" soda, as a preservation of the fat previous to its disin-
" tegration. In the process of defendants, this preserva-
" tion is accomplished by the use of ice. In the Mege
" patent, the disintegration of the fat is accomplished by
" grinding under mill stones. In defendants' process, by
" the employment of what is called a hasher. In the
" Mege patent, the rendering or separation of the greasy
" substance from the tissues is accomplished by heating
" in a vessel with a hot water jacket to a temperature of
" about 103° Fahrenheit, but sufficient to effect the com-
" plete separation of the greasy matter from the mem-
" branes; and to aid the separation there is added to the
" pulverized fat a fluid described as artificial gastric juice.
" In the process of defendants the operation of rendering
" is performed in a vessel surrounded by hot water,
" jacketed at a temperature at or about 120°, without the
" addition of the artificial gastric juice; and I regard this
" slight increase of temperature as the obvious equivalent
" for the gastric juice which is omitted, and in both cases
" the temperature is substantially one calculated to effect
" the result pointed out in the patent, of securing the sep-
" aration of the greasy substance from the tissues, with-
" out imparting to the former any taste of fat. Both in
" the patent and in the process of defendants, salt is added
" during the rendering. Again, the patent directs the
" slow cooling of the oily material, and its maintenance at
" a temperature of from 86° to 98°, until the larger part
" of its stearine has crystallized, and the subsequent separ-
" ation of this crystallized stearine from the oily matter
" constituting the butter product, by the use of a centrifu-
" gal and press. In the process of defendants, the greasy
" matter is allowed to cool to substantially the same tem-

"perature, and there maintained until the stearine has "crystallized, after which the oily matter is separated by "the action of a press, without the use of a centrifugal. "This, however, I consider to be a case of well known "mechanical equivalents, since both press and centrifugal "had been employed for the separation of fatty matters "long prior to the date of the Mége patent.

"Q. 22. In your opinion, and to the extent of your "knowledge, is there any other process by which the "product described and claimed in the Mége patent can "be produced except by the employment, substantially, "of the process therein set forth?

"A. There is no process by which the Mége product "can be produced except that of the Mége patent or its "substantial equivalents." (Rec., 104.)

Professor Chandler was also examined at length in regard to the identical and alleged substantial identity existing between the Mége American patent and defendant's process as evidenced by the stipulation and testimony. Professor Chandler's testimony as to such substantial identity between the process and product of the patent and stipulation is brief and to the point, as follows:

"I have read the paper referred to, and in my opinion, "the process described as conducted by defendants is "substantially the process described and claimed in the "Mége patent, and the product of defendants is the pro-"duct described and claimed in the Mége patent. My "reasons for considering the process of the defendants "substantially identical with the process of the Mége "patent, are the following:

"*First.* Mége, in the section entitled 'Neutralization "of the Ferments,' washes the raw fat with water, to "which an antiseptic had been added. The defendant

"washes with water, and uses an antiseptic temperature "secured by the aid of ice, in place of an antiseptic sub- "stance, the former being the well-known equivalent of "the latter. The defendant therefore accomplishes the "cleansing of the raw fat, and prevents decomposition of "blood and tissues in substantially the same manner as "the patentee.

"*Second.* The patentee crushes the raw fat, after it "has been subjected to the cleansing process, by means of "mill stones. The defendant accomplishes the same "crushing or disintegration by means of revolving knives, "in what is called a hasher. While defendant's apparatus "is more economical and more effective than the patentee's "it is manifestly a complete equivalent.

"*Third.* The concentrated digestion of the patentee "has for its object the liberation of the fat from the cellu- "lar membranes containing it, as well as its fusion and its "complete separation as a separate layer from the water, "all soluble substances present, and the tissues and mem- "branes, all of which form a separate layer beneath the "fat. To accomplish the liberation of the fat from the "cells, in which it was originally contained, the patentee "relies in part upon the previous crushing, in part upon "the use of the artificial gastric juice, and in part upon "the elevated temperature. The defendant accomplishes "the same result by the previous crushing and the ele- "vated temperature, and by a more perfect crush- "ing and a more elevated temperature is able to "omit the use of the artificial gastric juice. The "more perfect crushing and the higher tempera- "ture constitute a substantial equivalent for the less "perfect crushing, the lower temperature and the use "of the gastric juice. The final separation of the mol-

"ten fat from the water, tissue, etc., is accomplished by "the patentee and the defendant in exactly the same way, "namely, by heat, salt and mechanical agitation. The "fourth step in the process is accomplished by patentee and "defendant in exactly the same manner, namely, by cooling "the molten fat to about 86° F. and causing the stearine "to crystallize or granulate. The fifth and last step in the "process involves the separation of the stearine, which is "solid, from the oleomargarine, which is liquid. The pat- "entee accomplishes this with a centrifugal machine, some- "times supplementing the centrifugal with the press. The "press of the defendant alone is a substantial equivalent "for the centrifugal machine. The entire process of the "defendant is thus substantially the process of the pat- "entee. The product of the defendant's process posses- "ses all the properties, both chemical and physical, of the "product of the patent. It consists of oleine, margarine, "and stearine. It has the same melting point and consis- "tence, and like the product of the patent, is free from all "tallowy or fatty taste or odor." (Rec., 156–157)

Professor Chittenden was equally positive as to the identities and similarities between the patent in question and defendant's process and product, such testimony being pointed and concise, and will be found in record, page 294–295, questions 5, 6 and 7, the principal answer being to question 7, and as follows:

"Q. 5. As I understand you from your testimony in "your recent experiment at Brighton, Massachusetts, "you carried out literally or substantially the first five "steps of the Mege patent sued upon, to the extent even "of the slight proportion of so-called gastric juice men- "tioned in the first part of the third step. Is this correct?

"A. I did carry it out in all its details even to the

"point of employing the quantity of digestive mixture "specified in the patent.

"Q. 6. You have stated that you have read and are "familiar with the stipulation exhibit in this case setting "forth the defendant's process, with the exception of some "slight details testified to by the defendant's witnesses, to "the effect that the fat when it entered the melting kettle "from the hasher was pasty or pulpy in its hashing or "comminution; I will now ask you whether or not you "have faithfully and literally followed and carried out in "practical operation and working the process of defend- "ant's evidenced by this stipulation, and secured the re- "sulting product therefrom?

"A. I have faithfully carried out the process specified "in your question, and have obtained the resulting pro- "duct.

"Q. Will you please now state to the court whether "there was, is, or can be the slightest substantial differ- "ence of any description between the process of the Mege "patent sued upon and the defendant's process, as evi- "denced by this stipulation or in the resulting products "therefrom, either in the taste, smell or composition?

"A. I know of no substantial difference whatever be- "tween the defendant's process, as specified in the stipu- "lation, and the process of the American patent re-issue "No. 10,137. The only difference whatever in the two "processes would be the small admixture of the so-called "artificial gastric juice specified in the American patent, "which, as I have already stated, constitutes no substan- "tial difference, since its aim is mainly to accomplish the "same end as the complete crushing and bruising of all the "cells, namely, the liberation of the contents of the fatty "globules; for it is a well-known fact that an artificial

" digestive mixture has no action whatever on the contents " of the fatty globules, *and only a peptonizing action on* " *the surrounding tissues, and could by no means impart to* " *the fat any butter-like flavor.* Moreover, such products " as might be formed from the organized tissues present, " namely, peptones, or other products, would tend to " induce nothing more than a bitter or more disagreeable " taste or flavor. A comparison of the two products, " namely, that resulting from the American patent and " that from the defendant's process, leads me to believe " them of like composition, as they certainly are in taste, " smell, and in all other noticeable respects." (Rec., 294, 295.)

Professor Wheeler is equally confident and decisive in his statement, to the effect that the defendant's process is substantially and allmost literally the same in proceeding and effect as to the process of Mége American patent, and does not regard that there is any difference between the two; he briefly asserts this fact without elaboration in connection therewith, giving his reasons for so doing. The testimony of this professor being as follows:

" Q. 15. Have you ever carried out and followed " literally the process of the Mége American patent sued " upon to the extent of employing the slight gastric juice " composition down through the first five sections of such " patent?

" A. I have done so.

" Q. 16. Have you also followed and carried out " literally and exactly the defendant's process as repre- " sented by the stipulation filed in this case, with the ad- " dition or explanation thereto that the fat, as it came " from the hasher, was reduced to a pulp, or with all the " cells completely bruised?

"A. I have also done this.

"Q. 17. Please state whether or not, in your opinion, "there is any recognizable or substantial difference be- "tween the process of the American patent sued upon "and the process of the defendant identified by this stip- "ulation, or any recognizable or substantial difference be- "tween the product of the process of the first five steps "of the American patent sued upon, and the product of "the defendant's process, as represented by the stipula- "tion in this record?

"A. I do not regard that there is any difference."

Prof. Barker, although giving it as his opinion that the defendant's process identified by the stipulation was an entire and distinct process from that of the Mege patent, by reason of the third clause of the Mege American patent, still went far to destroy confidence, both as to the genuineness and truth of the statement, by the assertion that "*The precise function of gastric juice or artificial "digestion, as described by the Mege patent, is to dissolve "the membranes constituting the walls of the fat cells and "set free the contained fat.*" (Rec., 379.)

Prof. Barker also testified that he had witnessed defendant's process in operation, and that the thorough hashing and comminution of the fat was so complete and entire as to render it *pulpy or pasty*. (Rec., 405; C. Q., 85.)

Defendant's misleading Translation of the Mege Austrian and Bavarian patents.

In the defendant's exhibit translation of the Mege Austrian and Bavarian patents much stress is laid upon certain words of the translation, viz: "finely subdivided" and "subdivided finely."

Profs. Wheeler and Chittenden examined and carefully studied the original patent exhibits to ascertain if there was any justification for the use of such words or for such translation. Both of these scientists are linguists in the German language and understand the technical terms of the language. Both of these witnesses state emphatically that there is nothing to justify the presence of the terms "finely subdivided" or "subdivided finely" in defendant's translation. The language of Prof. Wheeler upon this point being, viz: "I find on examining the orig- "inal of both the Austrian and Bavarian exhibits, that there "is no word or expression in the paragraph to which the "questions refers, which either remotely or explicitly con- "veys the idea expressed by the English word 'finely.' "In the Bavarian, the expression is 'es theilt sich,' which "is equivalent for the English expression, 'it is subdi- "vided.' In the Austrian patent the expression is "'zertheilt,' the nearest equivalent in English for which "is 'coarsely crushed,' there being involved in the Ger- "man in this connection the further idea of coarsely "crushing under pressure. If the Germans wish to imply "the idea of 'finely,' they have in their word 'fein' the "precise equivalent for the English expression." (Ans. to Q. 37, Rec., 279.)

Prof. Chittenden expresses the fact as follows:

"I have carefully examined the original Austrian and "Bavarian patents and can find no justification whatever "for the insertion of the word 'finely' as specified in "your question. I find in the Austrian patent the fol- "lowing sentence or portion of a sentence: 'Das druch "das wasser und den druch zertheilte fett,' which, as I "translate it, means simply 'the fat subdivided by the "action of the water and pressure.' If it was the inten-

" tion to express fine division the German language is " provided with adjectives well adapted to express such a " fact; for example, the word 'fein', which has the exact " meaning of the English equivalent.

" In the Bavarian patent I find it written in the original " 'es theist sich', which means simply 'divided', 'sub- " divided'. It may mean, also, 'separate'. There " is certainly no justification for the insertion of the ad- " verb 'finely.'" (Ans. to Q. 12, Rec., 297.)

Mege American Patent—The Taste of Molten Butter.

In this connection, and bearing upon the question of infringement, Prof. Barker, in his anxiety to distinguish the product of the defendants, as set forth in the stipulation, from the product ef the American patent, and in this manner escape the question of infringement, in speaking of the Mege American patent, he says: " *That the object* " *of the process of artificial digestion, as I understand it, is* " *to produce this butter taste.*" (C. Q. 69, Rec., 403.)

Aside from the fact of the glaring inconsistency between this statement and the statement of Prof. Barker, just above quoted, to the effect that the " precise function of " artificial digestion, as prescribed by the Mege patent, is " to dissolve the membranes constituting the walls of the " fat cells and set free the contained fat," is the fact that such statement and conclusion of Prof. Barker is simply ridiculous as a matter of fact and of science. Indeed, no more flagrant misstatement of fact or conclusion of science could be stated in this error of Prof. Barker, and complainant's experts disclose its fallacy when their attention was called to such statement, as follows, Professor Chittenden stating:

"A. I know of no justification whatever for the state-
"ment specified in your question. There is certainly in
"the literature of the subject no authoritative statement
"for such a belief. My own experience in connection
"with many experiments conducted in my laboratory on
"the action of artificial and natural gastric juice on fatty
"or other tissues lead me to believe in the incorrectness
"of such a statement as specified in your question. More-
"over it is a fact well known as I have alread stated,
"that the products of a gastric digestion are usually
"possessed of a more or less bitter taste." (Rec., 295.)

Professor Wheeler also exposes the same error of conclusion of Professor Barker as follows:

"Q. 12. Do you agree with Professor Barker that
"there is anything in the slight amount of artificial gastric
"juice used in the Mége American patent sued upon,
"which gives to that product the taste of molten butter,
"or that artificial gastric juice can under any circum-
"stances give any such taste of fat?

"A. If the development of any such taste or flavor
"by the action of artificial gastric juice is possible, Pro-
"fessor Barker has been the first to observe it, and it
"certainly is an original discovery unknown to other
"chemists, who, unlike him, have not as yet abandoned
"chemical research for the domain of physics." (Rec., 274.)

Professor Morton also testified in relation to his experiments and products produced thereby on evidence in this suit as to the matter, stating the identity and resemblance between the two products, viz.:

"A. There was no difference; both resembled melted
"butter, in the entire absence of any taste of tallow or of

"raw fat, and might, therefore, in this sense be said to "resemble in taste melted butter, but neither of them had "anything of the characteristic taste which is peculiar to "butter as distinguished from all other fatty substances; "it was not, in my opinion, absolutely tasteless and odor- "less, but possessed in common with butter, and other "very pure fats, a taste and odor suggesting neither raw "fat nor tallow, and in no respect offensive." (Rec., 219; Q. 10.)

We will abide satisfied in the believe that the statements of these chemists forever set at rest the fallacious conclusion of Professor Barker to the effect that the employment of gastric juice produces in any manner the taste of molten butter in the Mège process in question, or can make the slightest difference in the product.

Paraf Patent.

It appears by this record that incidentally during the cross-examination of one of the complainant's witnesses, defendants offered in evidence certain letters patent granted Alfred Paraf, dated April 8, 1873, No. 137,564. No question was asked complainant's expert regarding this patent, neither did defendants ask their expert a word concerning it; but to the surprise of complainants upon the argument of the case below, this patent was printed as an *addendum* to defendants' brief and was urged as an anticipation of the Mége American patent. Certain of the facts developed by the testimony of complainant's expert witnesses apply with equal force to this Paraf patent and negate any commercial value to the process of that patent; the patent for Paraf providing for alternate heating and cooling of his product, Pafar using the word

"congealed" to express the condition of the product when the oleomargarine is to be separated from the solid stearine.

There is no testimony in this record of any reliability that Paraf ever produced any oleomargarine suitable for commercial purposes by his own process or by any other. Prof. Chandler, the only witness on this point, when asked if Paraf produced artifical butter on a commercial scale, replied: "I can hardly say with certainty whether his "work in this factory went beyond the experimental "stage, as he was engaged in raising capital and organiz- "ing a stock company to manufacture artificial butter." (Rec., 170, C. Q. 11.)

The testimony of Prof. Chandler shows clearly that this exploit of Paraf was a stock-jobbing affair, and the defendants could produce no evidence of any commercial value of the product of the Paraf patent except upon the verbiage and paid advertisement of a single paper published at that date. (Rec., 181; C. Q. 61 and 62.)

It is also perfectly evident that if the patent office had supposed that the invention of the Mége American patent was the same or substantially the same as this Paraf process, an interference would have been declared between the invention of Mége and the process of this Paraf patent either as to the original application filed by Mége or some one of the succeeding or intermediate re-issues.

We have small confidence that any reliance will be placed by this court upon this Paraf patent, largely for the reason that a patent which defendant's counsel had neither the confidence of inquiry concerning, of any of complainant's experts, nor of even exhibiting such patent to his own expert, will scarcely be deemed sufficient or worthy, for defeating any invention or patent.

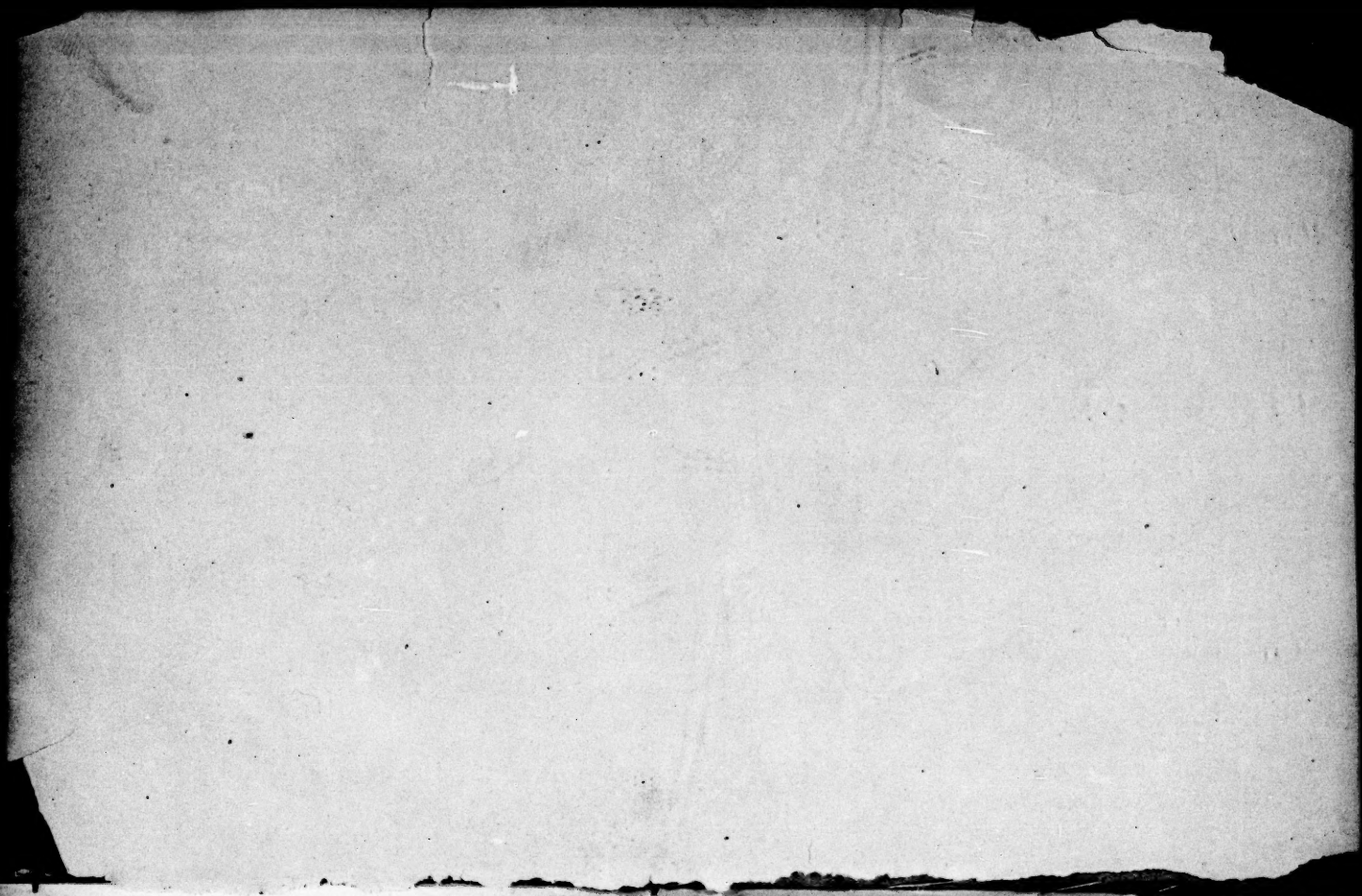
Conclusion.

In conclusion, your Honors, we confidently and hopefully submit the case of these complainants to this court, believing and expecting that the record of this case has made certain both as to conclusions of science and demonstrations of fact: that the Mège patent in question are good and valid letters patent; that neither of the Mége foreign patents embody, disclose or suggest the invention of such Mége American patent, and that the defendants have taken this invention, complete and entire, both as to process and product; and, therefore, that the decision of Judges Gresham and Blodgett finding otherwise is manifest error.

Respectfully submitted.

~~C. K. Offield.~~

Charles K. Offield



Robert Clarke & Co., Printers, Cincinnati. | March, 1890.

Supreme Court of the United States

OCTOBER TERM, 1889.

The Commercial Manufacturing Co. (Consolidated) and the National Dairy Co.,
Appellants,

No. 253.] *vs.*

The Fairbank Canning Company.
Appellee.

IN EQUITY.

APPEAL FROM CIRCUIT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS.

BRIEF OF T. D. LINCOLN.
Of Counsel for Appellants.

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Appellee.

BRIEF BY T. D. LINCOLN.

Having a very considerable interest in this case, I have taken no special part in the argument of it before the court, but left the presentation of it to Mr. C. K. Offield and Mr. B. F. Thurston. I have read the brief of Messrs. Offield & Thurston, and am quite willing to submit the case upon their able presentation of it, and upon such other argument as they may make orally to the court.

Respectfully submitted.

T. D. LINCOLN,
Of Counsel.

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MAR 25 1890

Supreme Court of the United States.

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vs.

Fairbank Canning Company.

Brief on Behalf of the Apellants

—BY—

BENJAMIN F. THURSTON.

PROVIDENCE:
E. A. JOHNSON & CO., LAW PRINTERS, 57 WEYBOSSET ST.
1890.

Supreme Court of the United States

THE COMMERCIAL MANUFACTURING CO. (CONSOLIDATED) AND THE NATIONAL DAIRY COMPANY, APPELLANTS,

vs.

FAIRBANK CANNING COMPANY.

No. 253.

BRIEF OF BENJ. F. THURSTON FOR THE APPELLANTS.

This is a bill in equity charging an infringement by the defendant of the reissued letters patent No. 10,137, dated September 24, 1878, for the invention of Hippolyte Mége for artificial butter, commonly known as oleomargarine.

The letters patent were originally granted to Mége on December 30, 1873, and were numbered 146,012. The original patent was reissued May 12, 1874 as No. 5,868 and again reissued September 24, 1878 as No. 8,424. The last named reissue was deemed to be invalid under the rule of decision of this court announced in the case of *Miller* vs. *Bridgeport Brass Co.*, and the present reissue was taken, which, with the exception that certain small slips of language are corrected, is the same as to the spec-

ification and claims as the original patent granted to Mége on December 30, 1873.

The claims are:

"1. The improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or without the addition of substances to change the flavor, consistency or color, as set forth.

2. The process herein described of treating animal fats in the production of oleomargarine."

The patent is printed at pp. 8-11 of the Record.

Assignment of Error.

The Circuit Court of the United States for the Northern District of Illinois erred in holding that the letters patent for the discovery of Mége had expired in this country in April, 1876, as the result, under section 4,887 of the Revised Statutes, of the expiration in Austria and in Bavaria of certain letters patent which had been previously granted in such foreign countries for the same invention. (Opinion and judgment of the court, pp. 26-38.)

The essential propositions upon which the defendant (the appellee in this court) relies are:

1. That the United States letters patent granted to

Hippolyte Mége, dated December 30, 1873, for "an improved means for transforming animal-fat into butter" is for the same invention as that described in certain letters patent previously procured by the same Mége in Bavaria and in Austria, and that inasmuch as such last named patents respectively expired in the months of April and May, 1876, it follows that the United States patent expired at the same time with the foreign patent having the shorter term, and no right existed in the complainants in October, 1882, when the present bill of complaint was filed, to assert any right under the said United States patent.

2. That the complainants, in consequence of the declarations made by Mége, in compliance with a standing rule of the patent office to the effect that the invention sought to be patented by him in the United States in December, 1873, was for the same invention that he had previously, in the year 1869, procured to be patented in France, are estopped now to deny that the invention covered by the United States patent is the same as that covered by the Bavarian or Austrian patents, in case it shall appear that these last named patents are substantially identical with the French patent referred to.

3. That one Alfred Paraf procured a patent in the United States about eight months before Mége procured his patent in this country, and that the effect of such Paraf patent is to anticipate the invention of Mége, as the complainants claim the patented improvement set forth in the United States Mége patent should be construed.

4. That the product of the process set forth in all the previously procured foreign patents of Mége is a product of

the same character as that stated in the French, English, Austrian and Bavarian patents to be the product obtained from working the process set forth in the Mége United States patent, and therefore it is to be presumed that the processes employed in the said foreign and United States patents are the same.

5. That the acts of Mége in procuring the re-issues of his patents, No. 5,868 of May 12, 1874, and No. 8,424 of September 24, 1878, work an estoppel upon him and his assigns to claim the lesser invention covered by the final reissued patent, No. 10,137, which brings back the statement of invention and the claim therefor to the compass of the original patent No. 146,012 of December 30, 1873.

Such are the propositions of mixed law and fact, in addition to the denial of the charge of infringement of the Mége United States patent, upon which the extended brief of argument for the defendant is based.

The Mége English and French patents were procured by him in 1869, and were respectively for fourteen and for fifteen years, and did not expire until July, 1883 and 1884 respectively, consequently the shorter of them in duration was in force and unexpired at the date of the commencement of the present suit in the fall of 1882. It is a fact, however, that the Bavarian patent expired in April, 1876, and the Austrian patent in May, 1876, and if it be true, as the defendant alleges, that the invention covered by the United States Mége patent is the same as that covered by the previous Austrian or Bavarian patents, then

the complainants' patent in the United States expired by operation of law (Sec. 25, Act of 1870, Sec. 4,887, Rev. Stat.), with the expiration of that one of the previous foreign patents for the same invention having the shortest term.

The Mege Discovery.

Preliminary to the consideration of the question whether in fact the invention, as specified and claimed in the United States Mége patent now in suit, is the same as that previously described in any one of the Mége patents previously obtained in foreign countries, it is important to understand that the great originality of the grand discovery of Mége is not brought into question. To him, and to him alone, with one consent on the part of the scientific and business worlds, the merit of the discovery of the substantial identity between the fat of beeves and the fat of milk or butter belongs. The story of the physiological investigations which he instituted is an interesting one, and forms now a part of the literature of scientific studies. Under a commission from the late Empress of the French to endeavor to discover some healthy substitute for butter. for the benefit of the poorer classes of the empire, he selected a number of cows from the royal herd, and subjecting them to diets on different foods for increasing or diminishing their accumulation of fat, closely watched the effect upon their physical condition from daily milking. He observed that there was a relation between the milk

yielding capacity of a cow and her condition as to fatness, that in proportion as her food was nutritious, and the other conditions of existence were favorable, her fatty deposit under the natural processes of digestion and assimilation tended, of course, to increase, but that the effect of regular and exhaustive milkings was to counterbalance this tendency to fatty accumulation. In short, he found from repeated experiments, that there was substantially a fixed ratio between the capacity of a cow to make fat and to retain it, the one factor depending upon the character and quality of the food supplied and the surroundings of the animal's life, and the other depending upon the quantity of milk withdrawn. From these investigations he inferred that the base of the milk of the cow was her fat, and, consequently, that the fat of milk was the fat of the animal elaborated by a process in the animal economy of reabsorption and then elimination through the mammary tissue.

If this conclusion that the fat of the cow was the gross substance from which the animal obtained her milk supply proved to be correct, then it would fall easily within the capacity of science to take the same raw material and by performing artificially the processes which the animal performed in the laboratory attending her living organism, obtain substantially that constituent of fat, which is the equivalent of the fat of milk or of butter. The whole world now knows that Mége's reasoning was sound, and that his conclusions were correct. By slow degrees, and in the face of the most bitter opposition, based primarily upon a natural repugnance to recognize that a domestic art, the practice of which is associated with the most cher-

ished recollections of childhood, and the mention of which recalls the placidity of the life on a country farm, could be superseded by the chemical and mechanical processes of the towns without injury to health, the discovery of Mége has made its way.

Since the final perfection by Mége in 1873, of a process for commercially utilizing his discovery, the manufacture of butter from the fat of beeves has become one of the most important and extensive among the prime industries of this country. Legislation, stimulated by rival interests, but professedly founded upon a natural sentiment, has in some instances ostracised oleomargarine butter, and imposed fine and imprisonment upon persons attempting to deal in it. At first the law was directed against selling oleomargarine under the name of butter, unless it was branded with its name of origin. The manufacturers then, in compliance with law, plainly marked every package of the artificial product with the name "oleomargarine." The general public continued to purchase and consume the material as before, and finally such repressive legislation was induced as in New York has been pronounced by the court of appeals to be an unconstitutional violation of the rights of the public to practice an employment and business which does not harm, but rather benefits, the public health, by displacing with a clean and pure artificial butter at a moderate cost to the poorer classes, the rancid heterogeneous mixtures sold as the cheaper of the professed dairy products. Surely no human employment or result of industry has been obliged to run such a gauntlet of enemies, and with the exception, perhaps, of the popular clamor against the introduction of labor-saving

machinery for the manufacture of textiles in the last century, none has been obliged to face such increasing prejudice. There is this noticeable difference, however, that labor-saving machinery was fought by the ignorance and the apprehension of the masses of toilers, while artificial butter has been warred upon by the influence of banded purveyors of an article of prime necessity of life through the fear of the inevitable effect upon their profits by the competition induced by a low-priced rival of equal purity and wholesomeness as an article of food.

Oleomargarine is now able to take its place in the produce exchanges of the world without the humiliation of a bad name and without shame from its paternity. It has conquered solely upon its merits as an article fit for human consumption. It has compelled those who claim to manufacture natural butter by the dairy methods to make better products and at a more reasonable price. It has driven out of the market inferior dairy mixtures and compounds. It has increased the commercial value of every beeve in the great stock yards; but, above all, it has placed within the reach of the poor, at a moderate price, an article of food which in name only is different from essentially the same article upon the tables of the rich.

The Process Described in the Foreign Patents.

What in general was the process which Mége, in his several foreign patents, described for manufacturing oleomargarine from animal fat, so as to utilize the grand dis-

covery of the fact in nature, which he had made, of the substantial identity between the fat of beeves and the fat of butter? The oily matter which is contained in the fat of beeves, and which has received the generally accepted name of oleomargarine, is in association with stearine, a waxy substance, encased in sacs almost infinite in number and of microscopic size. Upon this subject Professor Morton says (Rec., 98):

> "This structureless, oily matter in the living animal exists in a fluid state, enclosed in numberless minute envelopes of albuminous material, these little globules or sacs being grouped together in bunches, which are enclosed in more substantial tissues, and these enclosed bunches are more or less enclosed or separated by yet firmer membranes, through and among which pass the blood vessels, by which the circulating fluid travels to and from, and nourishes all parts of this as it does other portions of the animal structure. On the death of the animal, as its natural heat is lost, the structureless oily matter solidifies."

Mége well understood that it was necessary to rupture the envelopes which enclosed the oily matter by some method which would not, as by the decomposing action of heat, as in the tallow manufacture, cause the oil jackets and associated membranes and tissues to yield their fluids to affect the taste and odor of the oil of which he was in search. This *first* step in working his process, as he originally devised it and as he described it in all patents prior to the one taken by him in the United States, was to crush the mass of fat between pressure rollers, and at the same time direct upon the mass a shower of water to assist in dividing it and for cleansing it.

The *second* step was for opening the envelopes which

imprisoned the oil, or such of them as had not been already ruptured by the effect of the squeezing action of pressure rollers. This he proposed to accomplish by the aid of the solvent quality of artificial gastric juice, the office of which was to specifically attack the enclosing membranes and dissolve them. The quantity of the gastric juice was required to be so large as to enable the fatty mass to be immersed therein. At the same time he subjected the whole to a low degree of heat, corresponding closely with the natural heat of the animal body, and entirely within that which would be sufficient to decompose the membranous matter and tissues. This operation was continued until the dissolved fat in a limpid state appeared upon the surface. This fatty matter, so separated from association with membranous matter, was in fact composed of "*olein*" and "*palmatin*," or, as the latter constituent is commonly called, "*margarine*."

The *third* step was that of crystallization, so that the stearine could separate itself from the olein. The means described are to pour the fatty limpid mixture of olein and margarine into boxes which have at their bottoms a layer of tepid water. The material is allowed to stand until it is cooled and the crystallization of the stearine has taken place.

The *final* step in obtaining the oil was to take the cold mass which had been deposited upon a table and cut it into pieces of about half an inch thick, then wrap a quantity of these pieces in a strainer cloth, place the cloths with their enclosures between *hot* or *warmed* plates, and

subject them to pressure for separating the oil from the stearine.

We shall presently see that while the process above described, which is the same in all the foreign patents (the only difference between them being that in the Bavarian patent the cylinders can have conical cogs upon their surfaces, and in the Austrian patent the plates are spoken of as *warm*, while in the other foreign patents they are spoken of as *hot*), involves generally:

1. Washing and crushing of the mass of fat;

2. Liberation of the olein and margarine in the globules, by the solvent action of gastric juice, and a low degree of heat within the danger of decomposing the membranous matters;

3. Crystallization of the stearine;

4. Removal, by pressure, of the oil from association with the stearine after the mass has cooled by pressure between hot plates of metal.

The means by which the several steps were to be performed were not at all the improved means which form the subject of the process as it was finally improved by Mége and described in his United States patent.

It does not appear that prior to the procurement of the patent in the United States a single pound of oleomargarine oil had been made commercially, under any one of the foreign patents, or that any further result had come from the invention than the demonstration in the laboratory, or for experimental purposes, that the oil of beef fat was the

same in substance as the oil of cream. Upon the other hand the evidence is conclusive from the testimony of, and experiments made by, Professors Morton (p. 213-215), Wheeler (p. 272-273), and Chittenden (p. 289-290), that the process of crystallization in conjunction with tepid water, and the process of separating the oil from the stearine, by allowing the mass to become cold and then pressing it between heated plates, would not be practically of any value for manufacturing purposes, and in fact would necessarily involve the obtaining of a very inferior butter product in consequence of the obvious circumstance, among others, that a portion of the stearine would again, from the effect of such method of separation, become commingled with the oil and give that flavor in the mouth which comes from the presence of any waxy constituent, and which flavor pure oleomargarine must not have to be the artificial presentment of natural butter.

Distinction Between the Mege Discovery and his Invention.

A broad distinction must be kept in view between the *discovery* of Mége, which in and of itself is not and cannot be the subject of a patent, involving, as it does, a truth in nature, which has been revealed to one man alone it is true, but which is, when discovered, the property of all men, because it has had an existence, as a truth, through all previous time, and the *invention* of Mége, of which the law does take cognizance, and protects by letters patent.

The process or method by which the discovery of Mége

could be made available in an industry, and the product resulting from such process, in case it was distinguishable from natural butter, were alone the proper subjects of letters patent. When once the discovery of Mége had been made, he and all the rest of mankind were at liberty to contrive and invent as many different processes for utilizing the discovery as the problem admitted. Undoubtedly the first discoverer of a law of nature, who has also invented a means of making the discovery of value in the arts, is entitled to receive a very liberal interpretation of his patent, and many acts on the part of mere devisers of improved processes would be held to be infringements which would not be so held in a contest between the same process patents if devised by persons other than the first discoverer of the underlying law of nature or truth in physics. This is the doctrine of this court, as exhibited in its decisions, *Tilghman* vs. *Proctor*, 102 U. S., 707; *Morley* vs. *Lancaster*, 129 U. S., 263.

This proper and enlightened principle is, however, in its application, subject to the necessary qualification that the discoverer of a law of nature, who has also devised and invented a means or process for industrially applying it, should, in his patent, have a claim of invention which is fairly capable of receiving a broad and comprehensive interpretation. The courts cannot make claims for patentees, however original their inventions, and notwithstanding that such inventions are based on their own discoveries of natural laws, which are in antagonism with the specifications and claims which such patentees have themselves made. It is the duty of the courts to be liberal and beneficent toward a meritorious invention, of the primary creative

class, to the last degree consistent with the just administration of the law, in the determination of conflicting individual claims, but beyond this they cannot go.

Now, in the present case, I invoke this same doctrine of the right and duty of the courts to uphold and give effect to the invention which an inventor, who is also a discoverer of a natural law, has made. If I shall be able to establish that the United States patent to Mége is for a substantially different process than any process described in the Austrian and Bavarian patents, or, in fact, in any one of Mége's previous patents; and if it shall further appear that an improved process, which he subsequently invented and described in his United States patent, is the only basis upon which a successful commercial industry can be founded, then I submit that this court will not be disposed to defeat the Mége United States patent upon the patents previously taken by the same Mége in foreign countries.

Shortly stated, the novel proposition in the issues, as made by the defendant in this case, is that an original inventor who has discovered a law of nature, and patented in a foreign country an imperfect process for utilizing such discovery, must have a subsequent United States patent securing a complete, ample and different process for making the discovery commercially useful, defeated upon the proof that he had previously patented in a foreign country such insufficient and different process. To apply this doctrine would be to reverse the rule that an original inventor should receive the kindly protection of the courts. Mége in his French, English, Austrian and Bavarian patents describes and sets forth the best process for working his

discovery, which, up to the dates of those patents respectively, he had conceived and applied. When he came to procure his patent in the United States he had invented a radically different process for accomplishing the proper rendering of the fat of beeves, so as to obtain artificial butter by a process that could be worked commercially. He is still entitled to the same merit which belongs to him as an original investigator into the laws of nature at the time when he procured his United States patent as he was entitled to have when he procured his several foreign patents. The sole question which is important to be determined in the present controversy is as to the identity, or want of identity, between the process described in the Austrian and Baravian patents and the process described in the United States patent. If, in fact, it shall appear that the process of the United States patent is a different process from that described in the previously obtained foreign patents, then the existence of such foreign patents, or the fact of their expiration in the countries for which they were taken, is wholly unimportant. If the fact of want of identity is established, then the United States patent occupies the same position and is to be considered under the same rules as if the said foreign patents had never been taken, and in the determination of the question of infringement, the originality of Mége's invention, its utility in the industry which it has founded, and the breadth of interpretation which belongs to it from the circumstance that Mége was an original investigator into the domain of nature, fully attaches to his United States patent. I shall confidently insist that the prior foreign patents of Mége are to be regarded in the same light as

experiments are treated which precede an accomplished successful result.

The Radical Difference Between the Process of the United States Patent and the Process of the Foreign Patents.

The proposition that the process described in the Mége United States patent is radically different from the process which is described in all the previous foreign patents, can easily be established. In fact, upon this subject there is no substantial contrariety of opinion among the expert witnesses on either side. I say this advisedly, because it will presently appear that Professor Barker in his testimony for the defendant, bases his statement that the process described in the American patent is the same as that described in the foreign patents, upon a fundamentally wrong assumption.

The several foreign patents to Mége and the United States patent are analyzed and tabulated at page 236 of the Record. The correctness of this analysis the court can easily verify, and it becomes unnecessary therefore to repeat the proof in argument. Attention need only now be drawn to the important differences which distinguish the United States patent from such foreign patents.

In all the foreign patents the first step was complete washing and crushing between pressure rollers in conjunction with a stream of water, the office of which was to aid in the division of the fat in addition to removing

the soluble matters. The testimony of the expert witnesses shows clearly that the employment of pressure rollers, or rollers which were furnished with cogged teeth, in conjunction with a stream of water sprayed upon the fat at the time it was subjected to the action of the rollers, would be a very imperfect and insufficient method of mechanically opening the envelopes which contained the oily oleomargarine and stearine in the microscopic globules of the fat. Even to the unpracticed and unskilled person in chemistry and mechanics, it would seem reasonable that the water would act as a lubricant, and tend to keep soft and pliable the jackets of the oil cells, so that the effect of pressure in bursting the minute oil cells would be greatly lessened. At least it is certain that mere pressure upon a body of the character of structureless fat, having the characteristics which Prof. Morton has described at page 98 of the record above quoted, would be quite inadequate to open any considerable number of the oil globules. And, although the action of cogged cylinders, as referred to in the Bavarian patent, would be better than smooth cylinders for this purpose, yet it is manifest to the understanding that there is a wide difference between this step of the process, and that complete crushing and bruising of all the fat cells by the grinding effect of mill stones, that is emphatically required in the United States patent. True it is, that the foreign patents contemplated in an imperfect way the crushing of such cells, but the means described are the use of rollers in connection with streams of water. In the American patent this step of the process is improved by the *omission* of the use of water and the substitution of a complete grinding and bruising operation.

In place of the artificial digestion accomplished in the foreign patents by the aid of a large percentage of artificial gastric juice, sufficient in quantity to enable the fatty matter to be immersed therein, there is employed for this step in the United States patent only two per cent. of artificial gastric juice. Now, if this were all the change, it might be said that the difference as to this step was one of degree rather than of kind. This would not be quite true, because the office of the gastric juice in the foreign patents was to dissolve the enclosing jackets or envelopes of the oil cells, while in the American patent such envelopes had been already opened by the effect of a grinding process, and the small percentage of gastric juice is used only to supplement such grinding operation.

But the difference in this step of the process is not simply in the reduction of the percentage of artificial gastric juice. The fatty matter in conjunction with the two per cent. of gastric juice is given an increased temperature, "*so that the matter shall completely separate.*" The thing to be accomplished in this step is the separation of the oily matter from membranous association and confinement. The thing to be avoided is a degree of heat so high as to decompose the cell envelopes and the involved membrane and tissue. The point to which the heat is to be raised is not absolutely fixed, but the limit is, "that the matter shall completely separate," and that this "greasy matter must not have any taste of fat," but "it must on the contrary have the taste of molten butter." I insist therefore that this step of the process is a radically new one, and broadly distinguishable from the corresponding step in the foreign patents.

Another marked and most important distinction between the process described in the foreign patents and that set forth in the Mége United States patent is the step of crystallization. In all the foreign patents the material was allowed to cool to complete solidification, so as to be capable of being cut into slices. This step, too, was carried on in the presence of a bath of water in the "seeding" or crystallizing tank. The testimony in this case is without any disagreement that there must be no water in the seeding tank, but that the utmost care must be taken to have this vessel absolutely dry. In the United States patent the mass is not allowed to become solidified at all, but care is taken to have the crystallization take place while the material is kept at a uniform temperature of about eighty-six degrees for soft fats and about ninety-eight degrees for hard fats. When crystallization under these conditions has been performed, the material, still heated to this degree, is conducted to the machinery for effecting the separation of the oil from the stearine. The record in this case shows conclusively, from the testimony of practical witnesses on both sides (See *Easterbrook*, Rec., 333, Q. 25, and *Peck*, Rec., 435, C. Q. 108) that if the fatty matter becomes chilled during the process of crystallization, it must be returned to the melting kettle. We may concede that imperfect crystallization would be accomplished under the process described in the foreign patents, but it is not practicable to work the process for commercial purposes. It was a new and improved step which Mége introduced when he procured his American patent. It was probably the result of four years of study and experiment. It is enough, surely, for the purposes of this case, to show that crystallization at a uniform temperature, without allowing

the product to become chilled—much less to become solidified—is an entirely different step in a process from one which requires crystallization to occur in the presence of and in contact with water, until the material has become brought to the state of complete solidification, so that it can be cut with a knife.

The last step in the process of procuring pure oleomargarine, described in the foreign patents, is in marked contrast with the corresponding step described in the process of the American patent. The cold, fatty material is required in all the foreign patents to be first cut into small pieces, then a quantity of these pieces are wrapped in cloth and the oil separated from the stearine by means of pressure, the bags of fatty matter being arranged in the press in a pile, with *alternating heated metallic plates.* By this method, as the expert witnesses insist, it would inevitably follow that the heat in the metallic plates would cause some, at least, of the crystallized stearine to become liquified, and consequently it would pass through the strainer cloths into the oil. In the United States patent the fatty mass, which has not been allowed to congeal, is conveyed to a hydro-extractor, and the oil separated from the crystallized stearine without the use of heated plates. The United States patent also declares that under certain conditions a press may be made for aiding in the separating process.

The clear statements of Professors *Wheeler* (p. 270-273) and *Morton* (p. 209-215) as to the difference between the several foreign patents and the United States patent will be found to be exhaustive, and the attention of the

court is respectfully requested to the reasoning made by these eminent authorities in support of the essential importance of the differences which exist between the foreign patents and the United States patent as exhibited in the tabulated analysis and comparison which they present on page 236 of the Record.

I confidently submit that I have thus far established by incontrovertible testimony that there exist radical differences between the process of the foreign patents and the process of the United States patent. In fact the expert witness for the defendant, Professor Barker, does not pretend to say that the several steps set forth in the United States patent for the purpose of opening the oily globules enclosed in sacs, liberating the oil and stearine from the enclosing envelopes, without decomposing the membranous matter of the fat, separating the oil from the stearine by the crystallization of the latter, and finally collecting the oil and the stearine separately, are the same as to their execution as the methods described in the foreign patents. No question to that effect is asked him by the defendant's counsel, and for the obvious reason that he could not give any other statement as to the matter than that which is given by the several experts for the complainants. He does say that he finds the process of the United States patent anticipated by the foreign patents, but this statement is perfectly harmless to the complainants, when we understand his assumption as to the construction of the Mége patents.

He says, p. 380 :

> "I have compared the said patents together and in my opinion they are essentially for the same invention. So

> **far as my knowledge goes, Mége made but one invention, *i. e.*, the artificial production of butter from fat by producing the natural work produced by the cow when it reabsorbs its fat in order to transform the same into butter. This, therefore, constituted the essential feature of the inventor—of Mége, described in all the patents referred to."**

Now, in this statement of the breadth of the grand discovery of Mége, I cordially agree, and if he had gone farther and said that if Mége, had taken a patent in this country with a claim, like this, for example: "I claim the production of artificial butter from beef fat by means of the following process or succession of steps: 1st. Rupturing or dissolving the enclosing envelopes of the oily globules of fat; 2d. Liberating the contents of the oil sacs by means of a degree of heat so low as not to decompose any of the associated membrane; 3d. Separating the oil from the stearine by causing the latter to crystallize; 4th. Collecting the oil separately from the stearine," a party practicing the invention by the improved means exactly corresponding with directions as they appear in the United States patent *would be an infringer*, notwithstanding that Mége had only set forth in his specification in the supposed patent the same directions which are contained in the foreign patents. The doctrine of the Supreme Court in the case of *Tilghman* vs. *Proctor*, 102 U. S., 707. fully sustains this view and rests upon the sound and liberal rule that an original and first inventor—*a fortiori*, a discoverer of a law of nature or a principle of life, or of force—who has described one mode of practically applying his invention or discovery for useful purposes, is entitled to hold all subsequent improvers upon his invention as infringers upon his underlying invention,

because the range of equivalents is in such exceptional cases very broad in favor of such first and original inventor. This doctrine, however, is always subject to the qualification in applying it, as stated in the case of *Tilghman* vs. *Proctor*, *supra*, that the patent must contain a claim of invention comprehensive enough in its scope to cover the radical principle of the invention, otherwise, of course, the patentee will fail for want of a proper claim co-extensive with the true invention.

While the doctrine applicable to primary inventions of supreme importance is as above stated, in suits for infringements against subsequent improvers of the means which the patentees of such inventions have described for giving practical effeet to their inventions or discoveries, it does not follow that *such first and original inventors have the right to appropriate to themselves* subsequent improvements made by others. A striking instance of the truth of this statement, if any authority is needed for it, will be found in the two companion causes of *Clough* vs. *Barker* and *Clough* vs. *Mfg. Co.*, both reported in 106 U. S., 166 and 178, wherein the original underlying inventor obtained relief against a subsequent improver who had greatly increased the value of the device, while on the other hand, the patentee of the later improvements was protected against the appropriation of his improvement by the licensees under the first invention.

Prof. Barker's erroneous assumption is not that the invention of Mége, regarded as the first known processs for converting beef fat into butter, is a dominating invention, when considered as a process involving a succession of

steps of a general character, performing the functions in the process which I have above stated, but his mistake is in the implied assumption that the foreign patents comprehended the *improved* means for working Mége's own original discovery, which are set forth in this United States patent. Otherwise stated, it is true that the United States patent of 1873 is founded upon and employs, it may be, the broad generic invention which may, perhaps, be said to be described in his foreign patents, so that with a suitable statement of claim in such patents, a suit for infringement could be maintained in this country if such patents were taken here, but the United States patent of 1873 describes an improved process plainly distinguishable from the process of the foreign patents, and such improvement is not embraced or described in any one or all of the foreign patents. In fact, we say that no one of the foreign patents described a process which would produce any useful commercial product.

Test this by a familiar illustration. Suppose that Mége had procured a patent in this country in the precise language of the Bavarian patent, with the addition of a claim of invention of the breadth of scope which I have above formulated. Suppose A in 1873, procured in this country a patent for the improved process for making artificial butter, based upon the Mége discovery and expressed in the precise language of the Mége patent in suit, and concede that A, during the life of such Mége patent in this country, based upon the Bavarian patent, as above supposed, could be enjoined, would it not be clear that A, after the expiration of the previous Bavarian patent, could resume the business of converting beef suet into butter

under his own patent, and be protected by the courts until its expiration in the enjoyment of his invention or improvement against any attempted infringement by Mége himself, or against any other person? On the other hand, Mége would not, under the facts supposed, have any right to appropriate to himself during the life of his own patent the improvement of A, or afterwards, until A's patent had expired.

It results logically from this reasoning that the United States Mége patent did not expire with the expiration of the Bavarian or Austrian patent, for the reason that such previous foreign patents do not comprehend, or by necessary intendment embrace, the improved process or means, or succession of particular steps for utilizing in a better way the underlying broad invention of Mége which are set forth as the improvement covered by the United States patent.

Surely Mége is not to be judged more harshly in respect to the point made in defense, that his United States patent has expired by reason of the allegation of its identity with his own expired Bavarian or Austrian patent, than he would be in case some person, other than himself, had taken such patents for Bavaria and Austria. It is fairly to be anticipated from any enlightened and conscientious judicial tribunal, having the facts of this case before it, that, if it can be rightly done, it will be gratified, rather than disappointed, to find that Mége's last invention is distinguishable from his earlier methods for giving practical effect to his great scientific discovery of the origin and

source of butter, and its substantial identity with the fat of the animal from which milk is derived.

The Effect of the Mege Affidavit.

Assuming that I have succeeded in establishing the facts that the Mége United States patent is on its face for an invention not specified in, or embraced by, the foreign patents, notwithstanding that to use the improved process described in said patent would involve the use of a generic discovery, I proceed to inquire whether Mége in consequence of having signed an affidavit to the effect that French letters patent were granted to him on the 15th of July, 1869, for "An improvement in transforming animal fats into butter, above referred to," is now estopped to assert that the improvement specified in his United States patent is something more than, or different from, the invention specified in the said French patent.

A technical answer to this question would be, so far as the present suit is concerned, that the French patent *was in force and unexpired* at the date of the filing of the bill of complaint in this case. As I have already said, the French patent was substantially the same as the Bavarian patent which did expire in the year 1876. In order for the defendant to make out its position and escape the suit entirely, it must establish that the American patent is the same as the Bavarian patent, but so far as the affidavit is concerned, it may technically be said that Mége makes no

reference whatsoever to the Bavarian patent as being for the same invention, and that if therefore, this court should hold, notwithstanding the differences between the foreign patents and the United States patent, that the affidavit of Mége is conclusive against him as to the identity of the United States patent with the French patent of 1869, it would follow that the defendant could not escape wholly on this point of defense, for the reason that the affidavit is confined to the French patent, therefore, the expiration of the Bavarian patent cannot accomplish the destruction of the 1873 patent in the United States, unless the court shall find as a fact an absolute identity between the Bavarian patent and the United States patent.

I desire, however, to argue the point upon a broader ground, and to insist that the affidavit has no effect to limit the life of the American patent, in case my position is acceptable to the court, that the invention therein specified is an improvement upon the invention specified in the French or in any of the other foreign patents.

It does not appear from an inspection of the proceedings which took place before the patent office, that it was ever adjudicated that the invention set forth in the application by Mége in 1873, was for the same invention as that set forth in any one of his prior patents. His solicitor, Mr. Seward, upon filing the case, advised the patent office that he was informed, "That a French patent for this process was issued to Mr. Mége, October 2, 1869." It appears, that he subsequently filed the affidavit of Mége above referred to. I think it is fair to consider that Mége executed the affidavit in compliance probably, with the

request of his solicitor in the United States, who was mistaken in supposing that the French patent embraced the same improvement as the one specified in the United States application. It is fair also, I think, to give the most liberal construction to the paper.

It is perfectly consistent with the truth, if we understand that the Mége original invention as indicated in his foreign patent, was a succession of general steps or operations. Mége knew that he was the first discoverer of the fact of the identity between beef fat and butter. He was a scientist, not a lawyer, and it is not unreasonable to suppose, that although he knew that his last improvement comprehended in detail something more than, and was different from, what was contained in his French patent, yet, nevertheless all his patents were based upon his fundamental discovery. Conceding, however, that the written paper is to be regarded as of the same effect as if filed by any other applicant, I ask only that it be not considered in any critical spirit against Mége, but that such interpretation shall be given to it as is fairly consistent with what Mége intended to declare. It must be kept in mind constantly that the affidavit in question was made in compliance with the routine practice of the patent office. It is not a requirement of law. The statute provides, that a person who has procured a foreign patent for the same invention, shall not be debarred from obtaining a patent in the United States for such invention, but declares that such United States patent shall be limited to the life of such foreign patent for the same invention.

The patent in this case was granted to Mége for the

full term of seventeen years, without limitation or qualification. It expires, doubtless, by operation of law with the expiration of the French patent, in the event that the invention set forth in the two patents are the same, and not otherwise. The question of identity is a question of fact to be determined by the court. A patent was not invalid under the law as it stood at the time that the Mége patent was procured, in the event that its life is curtailed within the term for which it is granted, by the existence of a prior foreign patent to the same patentee for the same invention. This point was settled in *O'Reilly* vs. *Morse*, 15 How., 62.

But it may be said that Mége was an eminent chemist, and that, when he says in his affidavit that French letters patent were issued to him in 1869 for the "improvement in transforming animal fats into butter, referred to" in the American application, his testimony upon that subject is of so great weight that it serves to overbalance any testimony to the contrary coming from the eminent expert witnesses for the complainants. Now, in addition to the suggestion that the American patent does refer to, and is based upon, Mége's great discovery, and that in truth he was the first inventor of a means for transforming animal fats into butter, and that, therefore, the statement in the affidavit is not necessarily inconsistent with the position that he was also the creator of a further improvement in the means for making his discovery useful, I can array against the statement of Mége in the affidavit the testimony of Mége in the specification accompanying his application for the United States patent, wherein it is manifest, that he intended to declare, and does declare,

that the means described in his 1873 patent are an improvement upon any previous or known means for transforming animal fat into butter.

The full text of the Mége patent will be found on pages 8-11 of the Record. In the second paragraph, after the statement that his invention is the result of physiological investigations, and consists in artificially producing the natural work which is performed by the cow, he declares, in contrast with anything contained in the foreign patents, "*The improved means I employ for this purpose are as follows.*" Again at the close of the paragraph, under the caption "*Concentrated Digestion*," he concludes the state- of the execution of this step, which we have already shown is entirely different from the method employed in any of the foreign patents, with this language:

> "*This method of extraction has a considerable advantage over that which has been previously essayed. The separation is well made, and the organized tissues which it deposited are not altered.*"

Again in the fourth paragraph, under the caption "*Crystallization in a mass*," he points out the characteristics of his former processes in the statement that "*crystallization at unequal temperatures has been already employed.*" He is referring to that method of crystallization which involves the pouring of the fatty matter into a vessel containing a layer of tepid water, and allowing the material to become entirely solidified. He, in his United States specification of 1873, uses the following language:

> "*I have contrived for this purpose the following method which produces a very perfect separation, and is as follows:*

Again, in the fifth paragraph, under the caption "*Separation by centrifugal force*, he says:

> "*In order to avoid the numerous inconveniences of the employment of the presses which have been hitherto used, I cause the mixture of stearine and oleomargarine to flow into a centrifugal machine called hydro-extractor.*"

And again, in the sixth paragraph, which relates to the method of transforming oleomargarine into butter, he says:

> "*In the methods hitherto employed, the oleomargarine is transformed into cream, and this latter into butter. This complicated operation has many inconveniences. I attain the same result by the following manner:*"

In fact, the whole method for producing more perfect butter with respect to form and structure, as distinguished from an oily matter, are essentially different from the methods which are described in the previous foreign patents.

I submit, therefore, that any weight prejudicial to Mége, which the court might feel constrained to give to the affidavit of Mége, filed as the result of a rule of the patent office, is more than lifted by the direct testimony of Mége above given from the specification, which he, himself, prepared in French, and which was translated into English. If, therefore, the said affidavit of Mége is neutralized by the specification of Mége, then the question remains as we left it when this topic in discussion was reached, and the only matter to be determined is whether the improved process set forth in the American specification was pre-

viously set forth in the French, or in any of the prior foreign patents.

The patent contains two claims. One for the improved product or material, and the other "for the process herein described of treating animal fats in the production of the oleomargarine."

The defendant manufactures oleomargarine oil and is not charged with making solid butter.

Defendant's Argument Based on Identity of Product.

I am now brought naturally to the consideration of the point in defense to the effect that the material covered by the first claim of the patent is the same material in character as the material obtained by the process set forth in the foreign patents. If this be so, then the claimed material would not be good. The professional experts who have testified on the part of the complainant all insist that the materials differ in character chemically considered. They are undoubtedly consistent from the standpoint as chemists from which they speak. It is a question of law, however, whether the material obtained by the process of the United States patent is different in kind from that obtained by the process of the foreign patents, although a vastly improved material in commercial value and usefulness. It may well be said that oleomargarine oil, containing such a notable percentage of stearine as would neces-

sarily be the result in the event that the solidified mass of mixed oleomargarine and stearine were pressed between hot plates, is a different article in character from a pure oleomargarine oil separated from association with stearine by the process described in the American patent. Its value as a commercial commodity would certainly be very inferior, and it is a grave question whether it would in consequence of the stearine which it would contain be a butter product in a true sense. I am aware, however, that the legal question is a nice one, and I do not consider that it is entirely free from doubt. There is no evidence that the foreign patents were ever worked to any extent beyond laboratory experiments. It is therefore very difficult to determine, except by repeating experiments with the instructions of the Mége foreign patent, to say what the character of the article would be that is obtained. The experiments undertaken on behalf of the complainants show that no useful commercial article would be procured by following the process of the foreign patents, and the reasons are given at large in the testimony of the experts. There is no question, however, as to Mége's belief upon the subject, and undoubtedly he obtained in his laboratory a resulting product from the process described in his French and other foreign patents, which authorized him to make the statements as to its character which are found in his patents. However the fact may be, the case does not rest upon this claim. If the court should be of the opinion that in some quantity, a perfect oleomargarine could with care be obtained by following the process of the foreign patents, then a doubt would exist as to whether the claim for the material could be

sustained, except as limited to the outcome of the improved process.

The claim upon which I principally rely is the claim to the improvement in the process of obtaining oleomargarine, which is specified in the second claim of the United States patent. A product may be old, and the process for obtaining it may be a new and improved one. This is too elementary law to be argued before this tribunal.

Again, it may be that the resulting material from the improved process of the American patent is identical with natural butter, in chemical characteristics, in which case the article could never be the subject of a legal patent, although a very different process for producing the material would be unquestionably the subject of the patent, if distinguishable from any process previously known.

The suggestion is made by the defendant, that if the court shall find that the material resulting from the process of the United States patent is the same material, in legal character, as that which could be obtained by working the process of the foreign patents, then it would follow, as a proper inference, that the process of the American patent was the same as the process of the foreign patents. This position is entirely unsound. Because the sugar obtainable from a beet is the same sugar in chemical character as that obtainable from the cane, it by no means follows that a process for extracting the sugar of beets is necessarily the same process as the extraction of sugar from cane. It is impossible, when an effect can be produced by several causes, to infer from the existence of the effect, the cause

which produced it. This is not only a principle of logic, but also of the patent law.

The Paraf Patent.

As to the suggestion that there is anything in the Alfred Paraf patent of February 11, 1873, which interferes with the claim of the complainants under the Mége patent, I have to reply that it is not true as suggested in the defendant's brief, that the affidavit of Mége filed with his application tended to prevent an interference with the Paraf patent, which had already been issued. In the event that the Mége application in fact interfered with any invention specified in the Paraf patent, an interference is required to be ordered under the provisions of the statute in such conflicting cases. It would not prevent the declaration of the interference to file an affidavit to the effect that the invention was the same as that described in a prior patent to Mége, in France, in 1869. It would still be the duty of the commissioner, under the law, to give an opportunity to Paraf to contest the question of priority and to show, if he could, that he in fact made the invention at an earlier date than 1869, and had been engaged in experimenting with the view to perfecting his process down to the time that he procured his patent. The truth is, that there was not the slightest interference between the Paraf patent and the Mége application, and a comparison of that patent with the Mége patent will establish the truth of this declaration. It is manifest that the Paraf patent

does not involve any process of crystallization which is indispensable to the successful working of any process for converting animal fat into oleomargarine.

The Paraf patent came into the case by a side door in the cross-examination of one of complainants' experts, and apparently for no other purpose than to fix the fact that Paraf, in the patent, had stated certain ranges of temperature. The expert under examination was not asked whether the Paraf patent did comprehend the Mège invention. In fact, the defendant never asked his own expert a word concerning the Paraf patent, or attempted in any manner whatsoever to establish its substantial identity with any material part of the Mége process. It was the duty of the defendant, if he proposed to rely upon this patent under his pleadings, to put it in evidence as an anticipation of the Mége invention, and to submit some proof concerning it.

Without denying that there may be some instances of inventions described in patents prior to the one in suit, which are so plain and obvious in their character as not to require the aid of explanatory testimony, it is clear that a patent which involves chemical operations cannot be so considered and treated. This court cannot be called upon to perform the functions of expert witnesses, and for the reason that the court does not profess to have the necessary qualifications for the purpose. I am justified, therefore, in saying that the absence of any suggestion that the process of crystallization of the combined stearine and oleomargarine is to be performed in the Paraf patent, is enough to condemn it in the estimation of the court without fur-

ther examination. As to Paraf himself, it is, perhaps, now to be regretted that the record is not more full. All that we do know about him is that he borrowed some conveniences of Dr. Chandler to enable him to experiment with the Mége process, having before him the information as to the Mége patent which was contained in the *Moniteur Scientifique*. He attempted at one time to form a stock company, but there is not a particle of evidence that a pound of oleomargarine was ever made by the Paraf process, or that his proposed stock concern was ever anything more than a financial scheme. We, of counsel for the complainants, were astonished in the court below to find the Paraf patent printed in the brief of the learned counsel for the defendant, but were more surprised upon reading the argument which he seeks to base upon it.

The Effect of the Intermediate Reissues.

In reply to the position of defense that the intermediate reissues of the Mége patent, which were procured with expanded claims of invention, work an estoppel upon Mége now to confine by the reissued patent in suit, his invention within the exact limits of specification, and claims recited in his original patent of 1873, I need only say that it was undoubtedly intended to so enlarge the Mége patent by reissue as to include by direct assertion every artificial butter product which was obtained from the transformation of beef fat by any process whatsoever, in order to secure to Mége and his assignees in this coun-

try the largest possible protection in the enjoyment of his fundamental discovery. This practice in dealing with letters patent based on great discoveries had been recognized and approved by the profession and by the courts for more than forty years. But, in January, 1882, the Supreme Court reviewed the law in relation to the right of inventors to procure reissues, and so stated the limitations of the right that, although the complainants had prepared the record in a case upon the reissue No. 8,424 in readiness for final hearing, they were compelled to abandon the suit and surrender the patent for a reissue to reduce its scope of claim to the invention of the improvement as originally it was stated in 1873. This course has been repeatedly pursued in similar cases, and has been approved by the Circuit Courts and impliedly recognized as proper by the Supreme Court.

Infringement.

The only remaining question is that of infringement. It is certain that under the stipulation of the defendant the exact improved process of the Mége 1873 patent is employed, unless indeed the non-employment of any percentage of gastric juice for supplementing the action of the grinding or hashing devices for rupturing the enclosed oil sacs constitutes a new and different process.

The defendant has the right to transform butter by the process described in any one of the foreign patents, but

it does not choose to do so. If it exercised in its business the process of the foreign patents, it would employ and practice the invention of Mége, but by the aid of an imperfect method of utilizing it. It is the additional invention of improvement of Mége that he and his assignees are now entitled to hold. All the rest is open to the world.

It is manifest, from the tabulated comparison of the patents of Mége, and the process of the defendants, that every step in the sequence of operations set forth in the Mége 1873 patent is employed, save only that no gastric juice is used,

This leads me to inquire what is the office of gastric juice in the process. Upon this matter all the experts agree that artificial gastric juice attacks the albuminous membrane which encloses the oily matter in structureless fat, and dissolves it. It ruptures the membrane. It does the same thing so far as liberating the contained oil is concerned which a hasher or grinding mill does. It does not affect the oil at all. The suggestion made at a later date, under the stress of the case, by Prof. Barker, that gastric juice imparted a better flavor to the fat, is hardly worthy of serious consideration. He is overborne in this fanciful notion by the testimony of all the scientific witnesses for the complainants. Now, in dealing with chemical cases, the rule as to equivalents is more elastic than it is in mechanical cases. An equivalent in chemistry is something which, in doing its work, is "equally good."

Tyler vs. *Boston*, 7 Wall., 330.

The defendants finely hash the fat, in pursuance of Mége's

direction in his 1873 patent that "a complete crushing is necessary in order to obtain rapid work without alteration." Perhaps the defendants, by omitting gastric juice, do not as completely supplement the action of the hasher as would be desirable to obtain the full quantity of oil which the entire mass of oil sacs would be able to deliver if opened. The step, however, of the process is not altered or affected by the presence of, or the absence of, gastric juice, so far as its character is concerned. The defendants raise the heat in the rendering operation to 120 or 130 degrees, but entirely within that degree of heat which will cause the membranous matter to be decomposed. Heat as a digestive process was necessarily old and well known at the date of the Mége original invention in 1869. It has been employed in the arts beyond the memory of man. It was necessarily employed wherever tallow has been rendered in domestic operations. The discovery of Mége involved the use of heat, but the characteristic of the heat was that it should be so low in degree as not, as in the tallow rendering operations, to decompose the least portion of the membranons matter or tissue. So far, therefore, as the defendant employs a slightly increased temperature within the danger limit of decomposing the fat, they use this step of the Mége process. If the defendants will use heat so high as to effect the decomposition of the membrane, they never will produce artificial butter from beef suet, but their establishment will be one for tallow rendering, and not for butter making.

No one of the specific steps specified in the Mége patent of 1873 may separately and by themselves be considered as new. Thus so far as that patent is concerned, fine

grinding or hashing regarded as a mechanical operation to be performed upon a substance is in itself old in the arts. The same thing may be said of heat rendering and of the action of artificial gastric juice. So also the process of crystallization is in itself a natural operation, which alone and of itself disassociated from the process of which it forms a part, is old. Crystallization under particular conditions in the butter-making art is described in the foreign patents of Mége, and crystallization at a uniform temperature must of itself in other arts, or in the laboratory, be perfectly well known. The office of a hydro-extractor has for many years in various industries been perfectly understood. It is not any one of these steps *per se* that is the subject of the patent. It is the sequence and order of these steps, coupled with their specific character, which constitutes the improvement in the process which is the subject of the American patent, which distinguishes that patent from any of the foreign patents of Mége. The testimony of the expert witnesses upon the subject of infringement is arrayed in full in the Record, pages 95 to 186, and need not be repeated by me.

I respectfully insist, therefore, that the patent of Mége here in suit is for an improvement in the art of transforming animal fats into butter devised by Mége, the author of the great discovery of the identity between the fat of the cow and the fat of butter. As to this patent all that is described and contained in the prior Bavarian and Austrian patents was public property at the date of the commencement of this suit, and at the present date, the French patent having expired, it too has fallen into the common domain. The improved process covered by the

patent in suit is independent of anything contained in the foreign patents of Mége. It is a valuable improvement. It is the basis of an enormous industry. It is the only practical method by which for commercial purposes the invention of Mége has been utilized for the benefit of man. The patent remains in force for seventeen years from the date of its issue, according to the grant which it contains. It is unaffected by the expiration of any of the previous foreign patents. The defendant uses this process, and the complainants ask the favorable judgment of the court in their behalf.

BENJAMIN F. THURSTON,

Of Counsel for Appellants.

Supreme Court of the United States.

OCTOBER TERM, A. D. 1889.

NO. 253.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, AND THE NATIONAL DAIRY COMPANY, *Appellants*,

vs.

FAIRBANK CANNING COMPANY, *Appellee*.

In Equity.

BRIEF FOR APPELLEE.

L. HILL,
T. S. E. DIXON,
SOLICITORS FOR APPELLEE.

EASTMAN BROS., LAW PRINTERS, 157 WASHINGTON ST., CHICAGO.

Supreme Court of the United States.

OCTOBER TERM, A. D. 1889.

NO. 253.

THE COMMERCIAL MANUFACTURING COMPANY, CONSOLIDATED, AND THE NATIONAL DAIRY COMPANY, *Appellants*, *vs.* FAIRBANK CANNING COMPANY, *Appellee*. — *In Equity.*

BRIEF FOR APPELLEE.

I.

THE PATENT AND ITS REISSUES.

The patent here in controversy is Reissue No. 10,137, dated June 13, 1882, it being the third reissue of original patent No. 146,012, dated December 30, 1873, granted to Hippolyte Mege, of Paris, France, for Improvement in Treating Animal Fats.

The original patent, granted December 30, 1873, was reissued by the assignee of Mege May 12, 1874, No. 5,868; again reissued September 24, 1878, No. 8,424, and again reissued June 13, 1882. All these patents are printed in full in the Record, pp. 463 to 475.

The original patent (p. 463), contained only *two* claims, as follows:

1. "The improved *material* herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or

without the addition of substances to change the flavor, consistency, or color, as set forth."

2. "The *process* herein described of treating animal fats in the production of oleomargarine."

The first reissue (p. 466) abandoned these claims, described a widely different invention, and substituted *six* new and different claims.

The second reissue (p. 469) abandoned both the description and claims of the original patent and the first reissue, and substituted a new specification and *nine* claims, describing and claiming a widely different invention from that disclosed in the original patent.

Several suits were commenced by the owners of the patent for alleged infringements of this second reissue, but were never prosecuted to final hearing. In one of these suits, *The National Dairy Co., et al.* v. *Benjamin Shoeneman, et al.*, in the U. S. Circuit Court, for the Northern District of Illinois, after more than four hundred printed pages of testimony had been taken, and the case had been set for final hearing, the complainant abandoned the prosecution of the suit, surrendered the patent, and obtained the third or last reissue.

In this third or last reissue (p. 8, p. 472), the complainants abandoned their expanded specifications and claims and fell back upon the original patent, the specification and claims in the present reissue being *exact copies of the original in all respects* except where it was necessary to substitute the third person instead of the first person, by reason of the decease of M. Mege at some time prior to the last reissue. It contains but two claims, in the identical language of the original claims as above quoted,—the second claim covering a chemical process, and the first claim covering the product obtained by pursuing such process.

II.

THE ALLEGED INFRINGEMENT.

The specifications of the complainant's patent describe a process which, in its entirety, is therein stated to consist of nine steps, separately described and numbered. The complainants contend that the sixth, seventh, eighth and ninth of these steps are but modifications of, or improvements upon, a process and product described in the first five steps,—or, more properly, that the first five steps describe the process and product claimed, while the last four steps only describe some of the uses to which the products of the process can be put, with directions how to treat them for such uses.

Assuming, for the purposes of this part of the argument, that the complainant's contention on this point is correct, then the invention in controversy would reside in the first five steps described in the specification, which steps are as follows:—

"*To all whom it may concern:*

"Be it known that HIPPOLYTE MEGE, of Paris, France, now deceased, chemist manufacturer, did invent an Improved Means for Transforming Animal-Fat into Butter, of which the following is a specification.

"This invention, which is the result of physiological investigations, consists of artificially producing the natural work which is performed by the cow when it reabsorbs its fat in order to transform the same into butter. The improved means he employed for this purpose are as follows:

"I. *Neutralization of the ferments.*—In order to prevent the greasy substance which is settled in the tissue of the animals from taking the disagreeable taste of the fat, it is necessary that the ferments which produce this taste shall be completely neutralized. For this effect, as soon as possible after the death of the animal he plunged the raw fats, called 'graisses en branches' into water containing fifteen per cent. of sea-salt and one per cent. of sulphite of soda. He began thus the transformation an hour at least after the immersion and twelve hours at most afterward.

"II. *Crushing.*—A complete crushing is necessary in order to obtain rapid work without alteration. For this purpose when the substance is coarsely

crushed he let it fall from the cylinders under millstones, which completely bruise all the cells.

"III. *Concentrated digestion.*—The crushed fat falls into a vessel which is made of well-tinned iron, or enameled iron or baked clay. This vessel must be plunged in a water bath of which the temperature is raised at will. When the fat has descended in the vessel he melted it by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced. For this purpose he threw into the wash-tub containing the artificial gastric juice about two liters per hundred kilograms of greasy substance. This gastric juice is made with the half of a stomach of a pig or sheep well washed and three liters of water containing thirty grams of biphosphate of lime. After a maceration during three hours he passed the substance through a fine sieve and obtained the two liters which are necessary for a hundred kilograms. He slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate. This greasy matter must not have any taste of fat. It must, on the contrary, have the taste of molten butter. When the liquid does not present any more lumps he threw into the said liquid one kilogram of sea-salt (reduced to powder) per hundred kilograms of greasy matter. He stirred during a quarter of an hour and let it set until obtaining perfect limpidness. This method of extraction has a considerable advantage over that which has been previously essayed. The separation is well made and the organized tissues which do deposit are not altered.

"IV. *Crystallization in a mass.*—In order to separate the oleomargarine of the stearine, separated crystallizers or crystallizations at unequal temperatures have been already employed. He contrived for this purpose the following method, which produces a very perfect separation, and is as follows: He rendered the molten fat in a vessel which must be sufficient for containing it. This vessel is placed in a wash-tub of strong wood, which serves as a water bath. In this wash-tub he put water at the fixed temperature of 86° Fahrenheit for the soft fats proceeding from the slaughter-houses, and 98° for the harder fats such as mutton fat. Afterward the wash-tubs are covered and after a certain time, more or less long according to the fats, the stearine is deposited in the form of teats at the middle of the oleomargaric liquid.

"V. *Separation by centrifugal force.*—In order to avoid the numerous inconveniencies of the employment of the presses which have been hitherto used, he caused the mixture of stearine and oleomargarine to flow into a centrifugal machine called 'hydro-extractor.' The greasy liquid passes through the cloth and the stearine is collected. When all the liquid is passed he put the machine in motion, and the crystals of stearine are entirely exhausted without the auxiliary of the presses. However, during certain seasons there are animals which produce crystals of stearine soft enough for

rendering necessary the stroke of a press as a last operation; but in this case this operation has little importance, because it is applied only to a fraction of the product. In all cases the oleomargarine is separated from the stearine when it is cold and passed to the cylinder, constituting, especially if its yellow color has been raised, a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of 'margarine;' but if it is desired to transform it into more perfect butter, he employed the following means:

* * * * * * * *

"What is claimed is—

"1. The improved material herein described, produced by treating animal fats so as to remove the tissues and other portions named, with or without the addition of substances to change the flavor, consistency or color, as set forth.

"2. The process herein described of treating animal fats in the production of oleomargarine."

In other words, on the above assumption, the invention in controversy would consist, first, in the process described in the first five steps, for producing a pure oil, comparatively free from stearine, limpid, having no taste of fat but "the taste of molten butter,"—"a greasy matter of very good taste"—"which may replace the butter in the kitchen," and which, by the further process described in the last four steps of the specification, can be transformed "into more perfect butter;" and, secondly, in the oil so produced. This is the contention of the complainants, as shown by the 9th Ans. of Prof. Morton, p. 97.

The defendant manufactures an oil from animal fats by the process set forth in the "Stipulation" which is printed pp. 187, 188, and is admitted by complainant's counsel (Int. 19½, p. 275) to be a correct statement of defendant's process. Said "Stipulation" is as follows:—

"*Stipulation entered into between counsel, relating to the process or method of manufacture, followed by the defendant, which stipulation is referred to in several of the depositions appearing in this record.*

"UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

"The Commercial Manufacturing Company, Consolidated, *et al.*, *vs.* "Fairbank Canning Company. } *In Chancery.*

"It is hereby stipulated by and between the parties to the above entitled cause, represented by their respective counsel, and for the purpose of expediting the preparation and hearing of the above cause, as follows:

"That the defendant in its factory first runs the fresh beef fat, which has been packed with ice during the preceding night, through a hasher, where it is thoroughly hashed, and is comminuted, and then melts the hashed fat in a jacketed kettle at a temperature ranging from one hundred and twenty degrees to one hundred and thirty degrees Fahrenheit, the fat being thoroughly agitated by mechanical stirrers while melting; and salt being mixed with the fat while it enters the kettles, and then, when settled, the melted fat is drawn off into other kettles, when the temperature is raised about five degrees and maintained about three hours, when the fat is put into seeders, which are kept in a room at a temperature of eighty-four to eighty-six degrees, until it granulates and thickens. Then the stock is put into cloths holding three pounds each in a flat cake, seven by ten inches, and one inch thick. Eight of these are placed on an iron plate, and then an iron plate in alternation to seventy-five rows of cakes and plates and put into a press. Then the the oil is squeezed out by pressure in the press and runs into a tank, from which it is pumped through pipes into a kettle in the same room and temperature, where it remains several hours, and is run into tierces.

"This stipulation does not prevent the consideration or introduction of evidence by either party, relating to the subject matter thereof, not inconsistent with the contents hereof.

"That the complainants are to finish and complete at once, and at this sitting in New York, all their testimony, *prima facie*, and that the defendant is to use its best effort and endeavor to put in and complete its rebuttal within sixty days thereafter.

"NEW YORK, November 21, 1883.

"OFFIELD & TOWLE,
"*Compt's. Solrs.*
"HILL & DIXON,
"*Defts. Solrs.*"

The complainant's contention is, that, construing their patent as covering the process and product described in the first five steps of the specification, the defendant infringes it by making and selling the oil obtained as set forth in said "Stipulation."

To this end, they maintain that, in the third step of their patented process,—"Concentrated Digestion,"—the "*digestion*" is immaterial, the *gastric juice* non-essential, *the limit of temperature not to exceed 103° Fahrenheit* erroneous, and the "*molten butter*" *taste* untrue—the *process* being, on their theory, simply that of melting the fat at a temperature of about 120° Fahrenheit till the oil separates from the tissues, and then settling and crystallizing it and removing the stearine, and the resulting *oil* being merely tasteless and odorless, *i. e.*, having *no disagreeable* taste or odor.

By comparing the defendant's process with the complainant's patented process, it will be seen that there is a wide difference between them in these and other particulars; and the evidence shows an equally wide difference between the two products. Any construction of the patent which would enable it to cover the defendant's manufacture, must necessarily disregard the plainest directions given by Mege in his specification.

III.

STATEMENT OF THE DEFENSES.

In this case, three defenses are made, viz:—

1. That the patent had expired, before the last reissue thereof, by reason of the expiration of certain prior foreign patents granted to Mege for the same invention.

2. That the patent has been invalidated by its successive reissues in 1874, 1878 and 1882.

3. That even if unexpired and valid, then, in view of the

state of the art, including Mege's own prior patents in Europe and the patent of Alfred Paraf, April 8, 1873, in the United States, and in view of the specific limitations, in Mege's specification, to a temperature of 103° Fahrenheit, to the use of gastric juice, and to the production of an oil which "must not have any taste of fat," but, "*must, on the contrary, have the taste of molten butter*," the patent must necessarily be so narrowly construed as not to be infringed by the very different process and product of the defendant.

IV.

ARGUMENT OF THE DEFENSES.

1. THAT THE PATENT HAD EXPIRED, BEFORE THE LAST REISSUE THEREOF, BY REASON OF THE EXPIRATION OF CERTAIN PRIOR FOREIGN PATENTS GRANTED TO MEGE FOR THE SAME INVENTION.

The original patent of Mege, dated Dec. 30, 1873, No. 146,012, was issued on an application filed Dec. 13, 1873. The petition and specification were filed and the first government fee paid, November 1, 1873; but an additional affidavit was required by the Patent Office, to complete the application, and this affidavit was filed December 13, 1873. The Patent Office, therefore, treated the application as filed December 13, 1873, when the completed application papers were for the first time on file in that Office.

If, therefore, prior to the 20th day of December, 1873, or, *a fortiori*, if, prior to the 1st day of November, 1873, the invention secured by this patent had already been patented to Mege in any foreign country, then the United States patent, so granted, would expire with such foreign patent first to expire; the law being as follows:

"Sec. 4,887. No person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by

reason of its having been first patented or caused to be patented in a foreign country, unless the same has been introduced into public use in the United States for more than two years prior to the application. *But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent; or, if there be more than one, at the same time with the one having the shortest term, and in no case shall it be in force more than seventeen years.*"

Rev. St., Title LX, Chap. 1, p. 954.

Prior to the application for this patent, Mege had secured at least six foreign patents, to-wit: on July 15, 1869, a French patent for 15 years; on July 17, 1869, an English patent for 14 years; on Oct. 31, 1869, an Austrian patent for 1 year; on April 8, 1873, a Bavarian patent for 2 years; also a Belgian patent and an Italian patent.

The French patent expired July 15, 1884.

The English patent expired July 17, 1883.

The Austrian patent expired Oct. 31, 1870, but was renewed and extended, and finally expired May 26, 1876.

The Bavarian patent expired April 8, 1875, but was renewed and extended, and finally expired April 8, 1876.

The third, or present reissue of the Mege patent, upon which this suit is brought, was granted June 13, 1882.

It follows, therefore, that if either the Bavarian or Austrian patent was for the invention in controversy, then the present reissue, No. 10,137, of the American patent, is, and *ab initio* was, invalid and void, under the provisions of Section 4,887 of our Patent Statute; that, if the French patent contained the invention in controversy, then, without reference to other foreign patents, the American patent expired on July 15, 1884; that, if the English patent contained the invention in controversy, then, without reference to other foreign patents, the American patent expired on July 17, 1883; and that, if said English, French, Bavarian, and Austrian patents are all for one and the same invention, to-wit: the invention in controversy, then the right to an Amer-

ican patent expired with the earliest of said foreign patents, namely, the Austrian patent, on Oct. 31, 1870, and, under no assumption, can the patent be held to have continued in force after April 8, 1876, the date of the final expiration of the extended and renewed Bavarian patent.

These conclusions are supported not only by the plain provisions of the statute itself, but by the various decisions that have, from time to time, been made by this Court upon the construction and meaning of the section in question.

Copies of the specifications and claims of the French, English, Austrian and Bavarian patents are printed in the record, pp. 475–491.

That these four patents were all for one and the same invention and discovery, appears plainly from an inspection of their specifications and claims, and is admitted by the complainant's principal expert, Prof. Morton, ans. 5, p. 215; and his "Comparison Table," p. 236.

Record, p. 215:

"Q. 5. I see that you do not specifically treat or render as prominent in your answer the English patent to Mege as his other foreign patents, namely: French, Bavarian and Austrian. Please state what differences there are, if any, *either in process or product*, between the Mege English, French, Bavarian and Austrian patent exhibits. I mean, of course, the process and product of these patents *down to the point of the attempted separation of the stearine from the oil?*

"A. *There is no substantial difference between the English and the other foreign Mege patents*, but there is this formal difference," etc., etc.

This answer, endorsed by complainant's expert, Prof. Chittenden (pp. 297–298), covers all the foreign processes and products "down to the point of the attempted separation of the stearine from the oil." "The attempted separation of the stearine from the oil" is the fourth step referred to in said "Comparison Table" (p. 236), which fourth step Prof. Morton sets out in the same identical words under all the four foreign patents, with the single exception of the

word "warm," under the Austrian patent, for "hot," under the English, French and Bavarian.

The attempted separation of the stearine from the oil was, therefore, identically the same step under all four of said patents; and, comparing both statements together, the foreign patents were all for one and the same invention, both as to process and product.

It is important to keep this fact in mind in all the subsequent discussion of this case.

It follows, therefore, that if the invention claimed in the complainants' original patent, or present reissue, was patented in said French, English, Austrian or Bavarian patents, then, said foreign patents being all for one and the same invention, the right to an American patent expired with the expiration of the Austrian and Bavarian patents in 1876, as held by the Court below:—

A. ESTOPPEL.

Now, we submit in the first place, that the complainants are estopped to deny that the original United States patent to Mege was for the same invention that was patented in said prior foreign patents; and for the following reason:

It appears, from "Defendants Exhibit Patent Office Rules" (pp. 372, 373, folio 548), that when Mege's application for said patent was pending in the U. S. Patent Office, in November and December, 1873, the following rule was in force as one of the printed Rules of Practice of the U. S. Patent Office for 1873, as Rule 90, to-wit:—

"90. When application is made for a patent for an invention, which has been already patented abroad, the inventor will be required to make oath that, according to the best of his knowledge and belief, the same has not been in public use in the United States for more than two years prior to the application in this country."

On Oct. 31, 1873, C. A. Seward, Esq., of New York, in a letter transmitting Mege's application papers to the Com-

missioner of Patents for filing in the Patent Office, wrote as follows:

"I am informed that a French patent for this process was issued to Mr. Mege Oct. 2, 1869." (See p. 455.)

Subsequently, on Dec. 12, 1873 (p. 460), Mr. Seward again wrote as follows:

"New York, December 12th, 1873.

"THE COMMISSIONER OF PATENTS,
"Washington.

"*Dear Sir:*

"I enclose herewith the affidavit of Hippolyte Mege as required by Rule 90, which I hope will be sufficient to authorize the examiner to take up the application, and to proceed with the same in its due course.

Yours very truly,

C. A. SEWARD."

The affidavit, transmitted by Mr. Seward to the Commissioner of Patents, as referred to in said letter of Dec. 12, 1873, is printed on p. 460, and is as follows, the italics being our own:

"BEFORE THE COMMISSIONER OF PATENTS.

"In the matter of the Application of Hippolyte Mege for Letters Patent of the United States for an improvement in *transforming animal fats into butter*.

"REPUBLIC OF FRANCE, } ss.
CITY OF PARIS. }

"I, Hippolyte Mege, being duly sworn, do depose and say that I am a citizen of France; that I am the inventor of the improvement in transforming animal fats into butter above referred to; *that French Letters Patent were duly issued to me therefor on the fifteenth day of July* [October], *1869;* that I have caused the above application to be made for the issuance of Letters Patent of the United States for the said improvement, and that according to the best of my knowledge and belief the said invention and improvement has not been in public use in the United States for more than two years prior to the filing of my said application in the Patent Office of the United States for Letters Patent of the United States for the said improvement. *I make this statement on oath, conscientiously believing the same to be true,* and *by virtue of the provisions of Section 25 of the Act of Congress of July 8, 1870,* entitled An Act to revise, consolidate and amend the

Statutes relating to Patents and Copyrights, *and of Rule 90 of the said Patent Office.*

"H. MEGE.

"Sworn to before me this 28th day of November, 1873.

"JOHN MEREDITH READ, Jr.,

"U. S. Consul General."

The 25th Section of said Act of July 8, 1870, was as follows:

"SEC. 25. *And be it further enacted*, That no person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid, by reason of its having been first patented or caused to be patented in a foreign country; provided the same shall not have been introduced into public use in the United States for more than two years prior to the application, and that the patent shall expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term; but in no case shall it be in force more than seventeen years."

It will be observed that the complainants' assignor, Mege, with full knowledge of the Statute and Rule, and for the declared purpose of conforming to the requirements of both, made this affidavit, acknowledging that the same invention had been patented in France, July 15, 1869, and adding the solemn declaration: "I make this statement on oath, con-"scientiously believing the same to be true."

When this affidavit was filed, the application had been lying in the Patent Office without official action about six weeks, apparently awaiting the affidavit as a document necessary to enable the Examiner to act. In his letter of transmittal, Mr. Seward hoped that the affidavit would "be suffi-"cient to authorize the Examiner to take up the application "and to proceed with the same in its due course,"—clearly implying that the absence of the affidavit, up to that time, had been officially regarded as an obstacle to further proceedings in the Patent Office. The affidavit was thus filed not only to inform the Patent Office of an important fact, having a vital effect in law, but as a necessary legal step to enable the applicant's case to be proceeded with. Ten days

after the receipt of the affidavit at the Patent Office, the Examiner passed the case for issue.

It is submitted that these facts amount to an estoppel against Mege, and all claiming through him, on the general principle of

Legget v. *Avery*, 101 U. S. 256.

The simple fact is this: Mege, in applying for his U. S. patent, declared in effect, under oath, to the Commissioner of Patents and through him to the public, *that the thing which he was seeking to patent was the same thing which he had previously patented abroad*, and not some other and different thing; and the patent was granted to him with that understanding. This Court has repeatedly held, in substance, that a patent is to be limited to the thing which was originally applied for, and that the application papers may be resorted to, if necessary, in order to ascertain what that thing was. Can Mege's assignees now be heard to assert that the patent was for another and different process and product from that which in his application he solemnly stated it to be, making "this statement on oath, conscientiously believ-" ing the same to be true"? If not, that is the end of the case.

There are other facts in evidence, which, in connection with the above affidavit, are, we submit, sufficient to raise an estoppel against Mege and all privy with him, under another principle of law.

At the time when this application of Mege was filed in the U. S. Patent Office, and while it was pending therein before the issue of the original patent of Dec. 30, 1873, there was already in existence a patent granted to Alfred Paraf, of New York, dated April 8, 1873, No. 137,564, for an "Im-" provement in Purifying and Separating Fats," which de-

cribed and claimed a process of producing oleomargarine oil *without the use of gastric juice, and by rendering the fat at a temperature of from 100° to 120° Fahrenheit.* Said patent is in evidence in this case. (See p. 173, Ans. 25, 26, *et seq.*) By Paraf's process, fat is first hashed "*as fine as possible in a regular meat-hasher*," then heated in water for two hours to "a temperature varying from 100° to 120° Fahrenheit, "and stirring it constantly," then "allowed to cool" until "the mixture of congealed oleomargarine, stearine, and "membrane is separated from the water," after which, the fatty matters, removed from the water, are salted and worked thoroughly between two cylinders to complete the expression of the water, and then are packed in bags and subjected to a press to separate the oil from the stearine—the latter operation being conducted at a temperature sufficient to liquify the oil but not the stearine. The result is, melted oleomargarine oil, separated from the stearine, "perfectly "odorless," and "highly suited for domestic and cooking "purposes."

Paraf was a chemist of ability (Chandler, p. 170, Ans. 8, 9), who made a series of experiments in New York late in 1872 and early in 1873, in Prof. Chandler's laboratory, "repeating "the experiments of Mege *and testing some theories of his* "*own with regard to improvements in the process.*" (Chandler, p. 151, Ans. 5; pp. 170 to 173, Ans. 8 to 27). The result was this patent of April 8, 1873, in which he claimed—

"The process or processes for the improvements in the manufacture of products from fresh fat, substantially as hereinabove set forth."

The first artificial butter made in this country was made by Paraf's process; and the process was in use in the United States on a considerable scale, and was extensively published, as early as October, 1873. (Chandler, pp. 181, 182, Ans. 61, 62; p. 180, Ans. 56).

Comparing the Paraf and Mege processes with the defendant's manufacture, it will be seen that there is much greater

similitude between the Paraf process and the defendant's process than there is between that of Mege and that of the defendant. Both Paraf and the defendant make use of a simple rendering process, without artificial digestion; both use a temperature of 120° Fahrenheit or thereabout; and both obtain, as a product, oleomargarine oil, separated from an excess of stearine, entirely odorless, and without the taste of molten butter;—in all which particulars they differ from the process and product described in the Mege patent.

When, therefore, on the first day of November, 1873, more than six months after the issue of Paraf's patent, Mege filed his application for Letters Patent in this country, two courses were open to him, to wit: first, if he had, as the complainants contend, improved his original invention in the particulars referred to, he could have taken the position that his improved process was not the process patented abroad, but was a simple process of rendering, without digestion, at about 120° Fahrenheit,—in which case an interference with Paraf would have resulted, and the question of priority of invention could have been determined when the witnesses were all living and the facts were readily provable; or, secondly, he could take the position that, whatever improvements he may have made in the interim, this application and claim were intended to describe and secure the principles of the original invention as patented abroad,—in which case no interference with Paraf was necessary, but the patent could issue without contest.

Of these two inconsistent positions, Mege and his legal advisers chose the latter; and, apparently to fortify their position, they called the attention of the Commissioner of Patents to Mege's prior French patent of July 15, 1869, filed an affidavit declaring in the most solemn manner that the invention now sought to be patented was identical with that of the French patent, and thereupon obtained the issue of the Mege patent of December 30, 1873, with the claims

here in controversy, and without an interference with the prior Paraf patent. If he had construed his description and claims then as the complainants now construe them, they would have been infringed by the Paraf process, and therefore could not have been granted without an interference as provided by statute; construing them, however, as involving the process of digestion at 103° Fahrenheit—the temperature necessary for digesting—and as producing only an article having the taste of molten butter, no interference was necessary and none resulted.

His assignees, the complainants, are now endeavoring to expand this claim so as to cover another process in which no digestion is employed, no limitation to 103° F. observed, and no article having the taste of molten butter produced; and, in order to maintain this position, are insisting that the limitations of his United States patent are to be disregarded, his affidavit treated as a nullity, and his French patent held to be for an altogether different invention.

It is submitted that they are estopped to do this, by reason of the facts above stated.

"A party cannot occupy inconsistent positions; and where one has an election between several inconsistent courses of action, he will be confined to that which he first adopts. Any decisive act of the party, done with the knowledge of his rights and of the fact, determines his election, and works an estoppel."

Bigelow on Estoppel (Ed. of 1872), p. 578.

Smith's Leading Cases, vol. 2, p. 735 (Am. Ed. 1873).

B. ACTUAL IDENTITY OF MEGE'S INVENTIONS AS PATENTED HERE AND ABROAD.

Before entering upon this discussion, it is well to advert to certain preliminary matters, scientific and non-scientific, which are established by the evidence, viz:—

First.—That animal fat is a compound substance consisting of three oily matters, oleine, stearine, and margarine or palmatin. This substance is, in the animal, divided into microscopic globules, each contained in a thin membraneous sack or cell. In the living animal, the contents of the sack or cell are liquid. Oleine, margarine and stearine solidify or crystalize at different temperatures, but all below the animal heat. Stearine solidifies at a higher temperature than oleine or margarine.

Morton, pp. 98, 124, 128.
Chandler, pp. 153, 154, 155, 157, 158.

Second.—That artificial digestion was well known long prior to Mege's invention.

Morton, pp. 108 to 114, Ans. 17 to Ans. 32.
Barker, p. 402, Ans. 66.

Third.—That the process of separating fat from its enclosing sack or cell by *heat* is different from the process of separating them by *digestion*, whether natural or artificial. In the process of rendering (*i. e.* separating by heat alone) the heat dries up the cell-sack, causing it to become brittle and to shrivel, crack, or become permeable to the contained oils, and they then escape from it, leaving the dried up cells or husks as a residual product which, when aggregated in visible quantities, is commonly termed "scrap" or "cracklings;" whereas, in the process of separation by digestion (whether natural or artificial), the cell-sacks are *dissolved* by the gastric juice, leaving the contained oil free. The gastric juice attacks the membraneous cell-sacks, but has no destructive effect upon the oil.

Morton, pp. 98, 99, Ans. 11; 100, Ans. 13; 101, Ans. 16; 112, Ans. 23; 113, 114, Ans. 24, 25, 26–33; 136, Ans. 142; 140, Ans. 152; 137, Ans. 145; 241, Ans. 37.

Chandler, id. pp. 154, Ans. 11; 155, Ans. 14.

Barker, p. 379, Ans. 6.

Extract from Carpenter's Physiology, pp. 110, 111, folio 170.

The testimony of Prof. Morton, complainant's expert, p. 137, Ans. 145, is especially important and conclusive, and is as follows:

"C. Q. 145. Are the two processes mentioned in my previous question" (separating by heat alone, and by digestion,) "the same or different processes?

"A. *They are different processes.*"

Fourth—That the animal heat or temperature of oxen, sheep, etc., is from 100° to 103° or 104° Fahrenheit.

Morton, p. 107, Ans. 13.

Fifth—That gastric juice is active at the animal temperature, but becomes *inactive* if the temperature be reduced below that point, and becomes *decomposed and destroyed* if the temperature be slightly increased above that point.

Morton, p. 107, Ans. 10; 108, Ans. 15, 16; 108 to 112, Ans. 20, 21, 22.

Barker, p. 379, Ans. 6.

Carpenter's Physiology, cited on pp. 110, 111, as follows:

"This action of the gastric solvent upon the azotized constituents of the food is dependent upon several conditions. One of the most important of these is *temperature*. A heat of from 96° to 100° is required to keep up the solvent process, which *is retarded according to the depression of the thermometer below this standard, so that at the ordinary temperature of the atmosphere it is completely suspended*, to be revived, however, with an increment of heat; on the other hand, a trifling elevation of temperature above 100° *occasions a decomposition in the gastric juice, which entirely destroys its solvent powers.*"

Sixth—That gastric juice (artificial or natural) acts by catalysis—its pepsin not entering into combination with the substances which it attacks and dissolves, but remaining

undiminished in quantity and potency. A given amount of the pepsin of gastric juice is able to dissolve any amount of animal tissue, during which action the pepsin neither increases nor diminishes in amount, nor suffers any loss of power.

Morton, p. 113, Ans. 24.

Seventh—That *at the animal temperature* the heat alone, without the presence of gastric juice, is unable to break up the cells and liberate their enclosed oils. A temperature of 10° or 12° Fahrenheit above the animal temperature *is the very least additional temperature* which would effect the result by heat alone; and a considerably higher temperature, to wit, about 120° Fahrenheit, is necessary for practical business purposes.

Morton, pp. 132, Ans. 130; 134, Ans. 136; 135, Ans. 139.

Eighth—Long before Mege, it was well known that substances which are to be dissolved by gastric juice (pepsin) should be thoroughly ground up, or comminuted. Prof. Morton (p. 108, Ans. 17) says: "*It is a matter of course* that the more finely the material acted upon is comminuted, the more rapid would be the action." Carpenter's Physiology, p. 427, (Am. Ed. of 1853), says: "The importance of the previous state of minute division and incorporation with aqueous fluid, in promoting the action of the gastric solvent, has already been dwelt on" (p. 111). Morton, (p. 112, Ans. 21), says: "These conditions would secure artificial digestion, and the same would be the more rapid as the comminution of the digestible material was more complete." Barker, (p. 378, Ans. 5), says: "The second step entitled 'crushing' *is an obvious requirement* and had been long in use in the arts for similar purposes. Comminution facilitates treatment

because it increases the surface to be acted upon." In *Glue Co.* v. *Upton*, 6 O. G., 838, Mr. Justice Clifford said:

"The fact that small particles of soluble substances are more readily dissolved in liquids than larger ones, is a matter of common knowledge, and has been known for ages, whereof the memory of man runneth not to the contrary."

which statement the Supreme Court approved on appeal, 96 U. S., p. 9.

The Court below tersely put the fact as follows:

"Any man who had intelligence enough to know the uses of his own teeth would know the necessity of the complete comminution of any article to be subjected to the processes of digestion or the action of the gastric juice. It would hardly require a scientist to instruct an operative that the more finely a substance is communited the more direct and prompt would be the action of the gastric juice and the process of digestion."

Ninth—The various steps of Mege's patent (*i. e.* the first five steps) were old and well known, when considered each by itself and independently of the others. These steps are:—

Neutralization of the ferments.

Crushing.

Concentrated digestion.

Crystallization in a mass.

Separation by centrifugal force.

"*Neutralization of the ferments*" is only a high sounding name for mere salting or preserving from decay. (Barker, p. 378, Ans. 5.)

"Thus, in the Mege specification, it is directed to use water containing sea salt and sulphite of soda, as a preservation of the fat previous to its disintegration. In the process of defendant's this preservation is accomplished by the use of ice." (Morton, p. 104, Ans. 21.) The use of these substances was old. (Id., p. 122, Ans. 81, 82.) Prof. Chandler endorses Morton's testimony (pp. 157, 158, Ans. 21.) Prof. Barker says the use of the preservatives is not

necessary where the fat is to be rendered immediately upon the death of the animal (p. 378, Ans. 5.) Prof. Morton seems to agree with him on this point, as we infer from the first part of his 34th answer, p. 115, where he speaks of producing, "from a *fresh* or preserved fat," a "greasy matter without a fatty or tallowy taste," although, in answer 71, p. 120, he thinks that the preservatives would have to be applied in working "on a commercial scale."

"*Crushing*" fat previous to rendering it, was old. (Morton, p. 123. Ans. 90.) In Lunel's Treatise, published at Paris in 1864, the fat was directed to be *ground in a mortar*, then washed and melted at a gentle heat—certainly a most effectual method of crushing "all the cells" (p. 123, Ans. 91).

"*Concentrated digestion*," as we have already seen, was old in its general principles and method of operation, although Mege was the first to make use of it in the industrial arts. (Morton, p. 125, Ans. 96, 97.)

"*Crystallization in a mass*" was old. (Morton, p. 124, Ans. 92.)

"*Separation by centrifugal force*" was old. (Morton, pp. 124, 125, Ans. 93.)

Crystallization in a mass, followed by drawing off the liquid oil and subjecting the solid residue to pressure in canvas bags, which expressed the remaining oil and left the solid residue hard and white, (Stearine), was old. (Morton, p. 124, Ans. 92).

The only step in the patented process which, considered by itself, was new, was the artificial digestion, (Morton, p. 125, Ans. 97,) and this step, as we have seen, was new only in the sense of having never been applied in the industrial arts before Mege applied it in the manufacture of his oleomargarine.

(See, also, Morton, pp. 228, 229, Ans. 20.)

Tenth.—The rendering of fats at a gentle heat so as to produce them free from disagreeable taste or smell, was old. In the Domestic Encyclopœdia, published at Philadelphia in 1803 (p. 184), fresh fat is directed "to be melted by a gentle heat with a small quantity of water till the latter be evaporated; it is then to be strained off into an earthen vessel, when it will settle and be preserved from the air. When thus purified, fat is *almost totally divested of taste or smell.*" In Reese's Encyclopœdia, published at London in 1819, fresh leaf lard is directed to be cut into small pieces, melted by a moderate heat, and strained by pressing it through a linen cloth. . . . In order to obtain the oil of "*suet and lard*" very pure, "they should be washed in water till the water comes off colorless, before they are melted. During the melting the remaining water is evaporated, and that this is the case may be ascertained by throwing a little of the melted fat into the fire, when it will crackle if any water remains. *The heat must not be raised above 97°, the melting point of fat*" (lard) "because otherwise the fat is decomposed, rendered acrid and assumes a yellow color" (pp. 185, 186).

Eleventh.—Mege's invention *did not involve the discovery of any new scientific law or important class of scientific facts.* It was a new step in the arts or in the application of science, rather than a new step in science.

(Morton, pp. 97, 105, Ans. 7, and cross-answer 3.)

Bearing these things in mind, and remembering the admitted fact that the English, French, Bavarian and Austrian patents are all for one and the same invention, we are now ready to enter upon the proposed discussion of the question whether or not Mege's United States patent is for the same invention previously patented by him abroad.

1. *Mege thought it was,* when he filed his affidavit above referred to, wherein he stated on oath that they were for the

same inventions, "conscientiously believing the same to be true." This alone ought to be conclusive of the question. Who knows better than he?

2. *Professor Mott*, the former agent of the owners of this United States patent (p. 189, 190), a chemist of ability and integrity (Chandler, p. 181, Ans. 60), formerly employed to make experiments for the owners of the patent (Id., p. 178, Ans. 48; 180, Ans. 52, 53), *thought it was*, when he published his "Report" in the Scientific American of Nov. 26, 1876, stating, among other things, the following:

"The next process to be considered is Mege's process, *patented in England on July 17, 1869*, and finally *patented in this country December 30, 1873, and reissued May 12, 1874*. The reissue contains all the valuable points in both Mege's English and first American patent," etc., etc. (pp. 178, 179, Cross Q. 51).

3. *The complainants' assignor, the United States Dairy Company, and their counsel, thought it was*, when they filed their Bill in Equity in the United States Circuit Court for the Northern District of Illinois, on August 22, 1876, against N. K. Fairbank *et al.*, under Mege's reissue No. 5,868, dated May 12, 1874, in which they made the following sworn statement (see p. 390):—

"And thereupon your orators complain and say that *before the year 1869*, Hippolyte Mege, of Paris, France, discovered that a substance identical with true butter might be extracted from the fats of kine or other animals, and having reduced the same to practice, *took out patents for the same invention in France and England, in the year 1869*. . . . . And your orators further show unto your Honors that the said Hippolyte Mege . . . did on the first of November, 1873, apply to the Patent Office for a patent *for his said invention*, and such proceedings were had that on the 30th of December, 1873, Letters Patent of the United States were issued to him *for his said invention so made by him before the year 1869, and patented by him in that year in England and France*, the said invention not having been introduced into public use in the United States for more than two years prior to his said application."

The defendant's position on this question is, therefore, not a new one, nor one of their own devising—they were

taught it by Mege himself, in his affidavit filed in the Patent Office—and by the complainants' assignor, in a suit brought in 1876, in the U. S. Circuit Court for the Northern District of Illinois, against Mr. Fairbank, the principal proprietor of the defendant corporation. *Since that time, the complainants and their counsel and experts have received new light*—evidently not a scientific light, but a light derived from some of the decisions of the United States Courts on the subject of the expiration of American patents by reason of prior foreign patents for the same invention.

The construction which the complainants' assignor, and its chemical expert, Dr. Mott, in the year 1876, put upon Mege's prior foreign patents, *was a very broad one.* They found the foreign patents to contain not only all that was in the original patent of Dec. 30, 1873, but also all that was in the first reissue of May 12, 1874, which was then in force. They, therefore, construed the foreign patents as covering not only the process of separating the fats from their enclosing tissue by the solvent action of gastric juice at 103° F., but also as covering the separation by the action of heat alone at a temperature of from 115° to 125° F.* It is wonderful how much the foreign patents were believed to contain when these gentlemen supposed it for their interest, and how little they are now said to contain *since the new light dawned!*

If Mege himself signed and executed the applications for the first and second reissues, which describe and claim melt-

*NOTE.—The temperature of the ox being 103° F. (Morton, p. 107, Ans. 13), and separation by heat alone requiring at "the very least," 10° or 12° more, for even an imperfect result (Id. p. 134, Ans. 136), it follows that the minimum temperature at which the non-digesting process of the first and second reissues could be carried on would be about 115° F. According to Manley, a practical expert of ten years' experience, it is at least 117° (p. 58, Ans. 81–83). See, also, Conolly. Id., p. 45, Ans. 68, and Leo, p. 69, Ans. 13, 14.

ing by heat alone at a temperature of 125° F., after first crushing the fat between cylinders and millstones, as an alternative and equivalent process for melting by the aid of gastric juice at 103° F., then he, also, regarded that alternative and equivalent process as having been patented in his prior foreign patents; for he applied for the reissues as for *the same* invention patented in the original patent of Dec. 30, 1873, which invention he had already declared under oath to be identical with that of his French patent of July 15, 1869. *Thus Mege and all his assignees, lawyers and experts, for a period of nine years, down to June 13, 1882, occupied the position that the invention claimed in his patent of Dec. 30, 1873, had been patented abroad in 1869, and that the process of separating by heat alone without the aid of gastric juice, if equivalent to the process patented here in 1873, was equivalent to the process patented abroad in 1869.* On no other ground could they have included such process in the reissues, nor induced the examiner to allow claims for it therein without an interference with Paraf.

Coming, now, to a direct comparison of the process patented Dec. 30, 1873, with that before patented abroad, we call attention, first, to what seems *a decisive test of their identity*, to wit, *the actual identity of the products produced by said processes.*

Prof. Morton, complainants' expert, referring to the American patent, says (pp. 104, 105, Ans. 22, and cross answers 1 and 2):

"*There is no process by which the Mege product can be produced except that of the Mege patent, or its substantial equivalents*" (p. 104).

"C. Q. 1 (p. 105). Then the two are inseparable, are they not?

"A. *I so understand them to be.*

"C. Q. 2. And the Mege product is peculiarly and exclusively the creation of the patented process and all that it embraces?

"A. *It is a product which is exclusively produced by the Mege process or its substantial equivalents.*"

Prof. Chandler "agrees with Professor Morton entirely" on this as on all other points in the complainants' case. (Chandler, pp. 157, 158, Ans. 21; p. 156, Ans. 17, 18.)

This fact, established by the complainants' evidence, renders the invention of the product and the process one and the same invention, as a matter of law, so that a patent for the product could be lawfully reissued for the process, or *vice versa.*

"Where a new process produces a new substance, the invention of the process is the same as the invention of the substance, and a patent for the one may be reissued so as to include both, as was done in case of Goodyear's vulcanized rubber patent."

James v. *Campbell*, 104 U. S. 356.

"The product and the process constitute one discovery."

Goodyear v. *The Railroad*, 2 Wall. Jr., 356.

In the Goodyear Dental Vulcanite case, *Smith* v. *Goodyear D. V. Co.*, 93 U. S., 499), where the patent had been originally granted for a process and afterwards reissued for the product, the Supreme Court said: "Certainly it is not another process; and as its result is the same, it is impossible to hold that the reissued patent is for a different invention from the one protected by the original patent."

In *Powder Co.* v. *Powder Works*, 98 U. S., 126, the same principle was stated and fully explained, and the case in 2 Wallace, Jr., referred to and approved; the Court holding that where the invention of the one did not involve that of the other, but the two inventions might have been made at different times, and by different persons, the rule did not apply.

In the case now in hearing, the product and process, according to complainant's experts, are "inseparable"—the process cannot be properly worked without producing the product, nor can the product be produced except by the process or, to use the words of Professor Morton, "*its sub-*

stantial equivalents." The invention was made, therefore, whenever either the process or the product was first produced.

When the product was first produced by Mege, it "was," says Professor Morton, "an entirely new product, there being no trace in the literature of the subject, which I have very extensively examined, of any process which could have produced such a product, or any description of any product corresponding in properties with that of the Mege patent." (p. 103, Ans. 19; Chandler, p. 156, Ans. 17, 18.)

Now what is the product patented in this country by Mege, December 30, 1873?

According to the complainants' experts it is simply the oil of suet, lard, or other animal fats, separated from the tissue and cell-sacks without the use of such a degree of heat as would impart to it a tallowy taste or smell, and having the stearine removed—in other words, it is *oleomargarine oil*, the essential characteristics of which are—

First, that it is obtained by separation from the tissues of fresh or preserved fat;

Second, that its stearine is substantially removed;

Third, that it is free from disagreeable taste or smell.

The patent says that, in the digestive melting process, "no taste of fat is produced;" that the "greasy matter must not have any taste of fat. *It must*, on the contrary, *have the taste of molten butter;*" that the product is "a greasy matter of very good taste, and which may replace the butter in the kitchen, where it is employed under the name of 'margarine;'" and that said product *is capable of being transformed* "*into more perfect butter*," in which "*all the molecules take the qualities of the ordinary butter.*" It is admitted by complainants' expert, Morton, (p. 142, Ans. 163) that the "taste of molten butter," described in the patent as peculiar to the

oil melted by digestion, before the removal of its stearine, would also be peculiar to the same oil after the removal of the stearine, and that "it is manifest that this butter taste was assumed" (in the patent) "to exist in" the one as well as in the other.

It is a matter of common knowledge that butter has a peculiar taste and odor, characteristic of no other fat, and which is due to the presence of butyric acid or "butyrine." (Morton, p. 141, Ans. 154–156). The complainants' experts, however, take the ground that this is not the butter taste referred to in the patent, and that the patentee meant *not* butter taste, as such expression would be generally understood, but merely freedom from offensive or disagreeable taste or smell. *Why* they make this remarkable statement it is easy to see, because *the admitted fact* that the defendant's oil has no characteristic taste or smell of butter, would otherwise conclusively establish non-infringement. Hence, the "taste of molten butter" is construed by them to mean *not* the "taste of molten butter" at all, but simply the *absence of taste or smell!* Throughout the complainants' entire testimony, the defendant corporation *is assumed to infringe because it makes an oil, from animal fats, without disagreeable taste or smell and substantially free from stearine*—an oil which, Professors Morton and Chandler say (p. 103, Ans. 19; p. 156, Ans. 17, 18) was never known till Mege produced it, and can be produced by no process except that of Mege "or its substantial equivalents." (pp. 104, 105, Ans. 22, 1, 2.) For complainants' testimony on the characteristics of this patented product, see *Morton*, pp. 97, 101, 102; *Chandler*, pp. 152, 153, Ans. 7, 8; 155, Ans. 15.

Now, omitting for the present the question as to the characteristic taste of molten butter (which will, however, be discussed hereafter) let us see what product the foreign patents describe as resulting from the process therein set forth. Manifestly, if they describe the oil which resulted after ex-

pression of the stearine as an oil from animal fats, substantially clear of stearine, and having no disagreeable taste or smell, they describe the product the exclusive right to manufacture which the complainants are trying to cover and secure by the American patent.

All the foreign patents relate solely to the treatment of animal fats, and all prescribe the melting of such fats, by the aid of artificial gastric juice, at the animal temperature, which is the same temperature prescribed by the American patent.

The French, English and Bavarian patents all state that the invention is based, among other things, upon the deduction of modern science that the *odoriferous*, colored, *acrid* and *rancid* substances do not pre-exist in the natural fat, but are developed by heat, fermentation and chemical agencies, and the invention proceeds upon the theory of "applying these researches to domestic economy."

The French patent declares that the product is, "1. A fine fat *without taste or smell*, comparable to the most desirable fats. 2. A variety of real butter taken from its source, and made as in the milk secretion, but superior to milk-butter as to its preservation."

The fat, after melting, "has no longer the animal odor, but the taste of delicate fat."

The stearine is removed by pressure in canvas. The resulting product is "about 60 per cent. of a mixture of *margarine and olein*" (no stearine) "of a composition like lard but of a superior flavor. The solid part remains in the canvas. . . . Whatever fat be used, there is obtained by this procedure a sort of white or slightly yellowish lard of absolute purity, and of the taste of almonds, hitherto unknown of animal fats."

. . . "The fatty body obtained as above consists, like butter, of margarine, olein, and a small amount of volatile

oil. This fatty body when pure and it has undergone no change by heat or chemical agents, *is the fat which the cow reabsorbs in its organism to pass it through the milk-gland. After this passage the fat is scarcely changed and becomes the variety of fat known as butter.*"

The patent then describes the churning of this product with caseine of fresh milk, which results in "butter superior to ordinary butter for the purposes of consumption or preservation. The navy can hence in the future have fresh butter at its disposal."

The English patent states that the product is, first, "a virgin fat *without any smell or odor of fat* and like the best fatty bodies; second, a variety of true butter taken at its source, *formed as in ordinary lactation*, and superior to butter from milk by the length of its preservation."

The fatty body, after melting, "has no smell of animal fat and all the odor of the most delicate fatty body."

The stearine is removed by pressure in cloths, and "there is thus obtained about 60 per cent. of a mixture of *margarine and olein* of a composition identical to lard, but of superior savour; the solid part remains in the cloths."

. . . "Whatever suet be employed, I obtain by this process a sort of white or slightly yellow lard of absolute purity, and having an almond odor hitherto unknown in animal fats. This new fatty body is especially applicable among other purposes, first for food to replace fats and lards."

. . . "There is besides obtained by this process a distinct product destined to render great service in domestic economy—in fact the fatty body obtained as above is composed like butter of margarine, olein and a little odoriferous oil. It is this fatty body when it is pure and which has experienced no modification, either by heat or by chemical

agents, which the cow reabsorbs into her economy in order to pass it into her mammal; after this passage the above fatty body is scarcely modified, and becomes the variety of fat known as butter."

The patent then describes the churning process mentioned in the French patent, after which, it says:—

"The butter thus obtained is preserved butter, but fresh butter identical with ordinary butter is also obtained by agitating the above mixture at a lukewarm temperature until the formation of a cream possessing all the properties of real cream. This cream is afterwards treated in the usual manner in order to extract the butter."

And finally the patent claims:

"Treating suet substantially by the means and in the manner hereinbefore described, and in the production by such teatment, first, of *a virgn fat without odor or savor of fat*, and second *a variety of real butter taken at its source formed as in ordinary lactation, and superior to the butter obtained from milk by the length of its preservation.*"

The Austrian patent states, among other things, as follows:—

"My invention consists in the production of neutral fatty bodies of hitherto unknown natural appearance and excellent properties. By means of a special treatment of crude tallow I obtain a pure fat devoid of smell and taste, which does not become rancid and which keeps fresh for a long time."

The fat, after melting and settling,

"has no longer the odor of animal fat, but the taste of finest fats."

After the fat is cooled and crystallized, it is pressed in canvas, in small cakes, between warm plates, and from this operation

"there is obtained about 60 per cent of a fatty body resembling butter and identical in composition with lard, but *free from odor and of a perfectly pure taste.* The solid portion remains in the canvas."

After solidifying and decoloring,

"I obtain partly solid, partly soft, white or faintly yellowish perfectly pure fatty bodies, which have a faint flavor of almonds."

The Bavarian patent states the invention as

"especially intended to benefit the navy and the less wealthy classes by furnishing excellent edible and preservable fats at a price considerably lower than of present *similar products, for instance butter* and the finer grades of fat."

It then declares that

"*The reduction in the price of butter* will in a large measure contribute to the general wealth, for stock-raisers, instead of making butter, will feed their milk to calves and thereby get more stock, thus furnishing more cattle for slaughtering purposes and at a lower price. The new procedure is also of a considerable importance from a hygienic point of view in doing away with the emanation of bad odors inevitable with the former chemical methods and due to the excessive high temperature to which fats had been exposed.

"The new procedure depends on the following conclusions of modern science:

"1. That the mal-odorous, colored, acid and rancid ingredients are not originally contained in the crude fats as they occur in nature. 2. That these harmful substances are developed by the activity of the organized tissues under the influence of fermentation, heat and chemical agents. 3. That the fats of milk—termed butter—consist only of the immediate fat which is altered first by a cellular tissue, and then by the organized tissue of the udder. By utilizing these principles in industrial pursuits or in domestic economy, there is obtained from the crude fats and the tallow:

"A, *a pure fat without the customary fatty smell and taste, which does not stick to the palate* and which resembles the fatty bodies most desired for eating purposes.

* * * * * * * * *

"D. This fat, *really identical with the fat of butter, taken from its source before it has been changed in the milk-gland*, can be made into different kinds of butter, which although prepared by an artificial process, is really butter, and *differs only from the ordinary butter by keeping fresh for a much longer length of time.*"

Then the patent describes the washing, crushing, melting with the aid of gastric juice at the animal temperature, settling or drawing off (at which stage the fats have lost the aaimal odor and acquired "a particular taste"), cooling and crystallization, after which it proceeds as follows:—

"4. PRESSURE. This operation is intended to separate the hard con-

stituent which makes the fat granular, congeal rapidly and stick to the palate. The cooled fat is cut into slices about one inch thick, and put into a cloth between hot plates of a press. *The portion which runs off is a mixture of margarine and oleine, resembling lard in composition and of about the taste of fresh butter.* It melts in the mouth like butter and *does not stick to the palate like beef-fat.* The solid residue taken out of the cloth is good stearine, fit for making candles immediately."

After describing the solidifying and decolorizing of this product, the patent continues:

"The white or faintly yellowish fat obtained by means of the described procedure is remarkably pure and has a taste of almonds hitherto not known of any animal fat. It is especially available for

"A, foods as a substitute for animal fats and lards. * * * *

"E, the artificial production of butter."

Then, after describing the process of the transformation into butter, it concludes:

"Butter thus prepared keeps longer than milk-butter, and does not, like the latter, acquire the pungent odor due to butyric acid, and it contains less caseine, insoluble in ether, and may contain less water or buttermilk as may be desired, than butter obtained in the usual manner.

"Since the above described modes of procedure dependent on known and unknown methods are new in their industrial entirety and furnish *new products*, we claim them as our exclusive property for the entire term of the patents."

Now there is nothing predicated in the American patent, or by the complainants' experts, about the product of the first five steps of the American patent, that is not predicated by the foreign patents about the corresponding product obtained by the process therein described.

These above mentioned essential characteristics of the product of the American patent, which, the complainants' experts say, determine the question of infringement, to wit:

First, that it is obtained by separation from the tissues of fresh or preserved fat;

Second, that its stearine is substantially removed;

Third, that it is free from disagreeable taste or smell;

Are, in the foreign patents, expressly declared to be equally characteristic of the corresponding product described in all those patents.

Both the foreign and American patents employ substantially the same terms of description.

FIRST:

"This greasy matter must not have any taste of fat."
American Patent.

"A fine fat without taste or smell."
French Patent.

"A virgin fat without odor or savor of fat."
English Patent.

"A pure fat devoid of smell and taste."
Austrian Patent.

"A pure fat without the customary fatty smell and taste."
Bavarian Patent.

SECOND:

"It must, on the contrary, have the taste of molten butter."
American Patent.

"And of about the taste of fresh butter."
Bavarian Patent.

THIRD:

It is "oleomargarine."
American Patent.

It is "a mixture of margarine and oleine."
French, English and Bavarian Patents.

FOURTH:

It is "a greasy matter of very good taste, and which may replace the butter *in the kitchen*, where it is employed under the name of *margarine*."
American Patent.

It is "especially applicable for:

1. Alimentation, replacing fats and lard."
French Patent.

It "is especially applicable among other purposes, first for food to replace fats and lard."

English Patent.

"It is especially available for
A, foods, as a substitute for animal fats or lard."

Bavarian Patent.

Thus, it is treated, throughout all the patents, as a proper substitute at this stage of the process, for "kitchen butter" or its equivalent sweet fats or lards. The name "margarine," under which the American patent says it is (November 1, 1873) employed, *was given to it in the 5th and 6th Sections of the prior Bavarian patent*, and the reference, in the American patent, to its *use under this name*, undoubtedly refers to such prior use in Europe, perhaps in Bavaria, *under the same name, given to it there by the patentee.*

FIFTH :

It is, under all the patents, except the Austrian, employed, among other uses, as a base for the manufacture of a more perfect butter, by the aid of a little mammary tissue and milk (or its product, caseine), and a process of churning. *One of the tests by which the complainant's experts all profess to determine the question of infringement, is the suitableness of the product for this manufacture of more perfect butter*, by a process which transforms the product from a substitute for kitchen butter into a full substitute for good table butter. This characteristic belonged equally to the foreign as to the American patent.

SIXTH :

In the transformation of this kitchen butter product into table butter by the process of the foreign patents, caseine of milk is used, and,

"The butter thus obtained is preserved butter, but fresh butter identical with ordinary butter is also obtained by agitating the above mixture at a lukewarm temperature until the formation of a *cream possessing all*

the properties of real cream. This *cream* is afterwards treated in the usual way in order to extract the butter."

English Patent (July, 1869.)

"When the fat becomes milky, it appears at first like a thick milky cream."

Bavarian Patent (April, 1873.)

"In the methods *hitherto employed* the margarine is transformed into *cream*, and this latter into butter."

American Patent.

Then follows a description of the use of milk instead of the caseine of milk, in the transformation into butter, and this is stated to simplify the process by avoiding the previously employed step of first reducing the oleomargarine to cream. But it will be noticed that the product which is thus made into butter without first reducing it to cream is referred to in the American patent as *the same product which had "hitherto" been reduced first to cream and then to butter.*

SEVENTH:

It is a product obtained by "artificially *producing a natural work which is performed by the cow when it reabsorbs its fat in order to transform the same into butter.*"

American Patent.

"*This fatty body*, when pure and it has undergone no change by heat or chemical agents, *is the fat which the cow reabsorbs in its organism to pass it through the milk-gland.* After this passage the fat is scarcely changed and becomes the variety of fat known as butter." . . . "It must not be forgotten that the fresh and pure fat obtained as above is but butter in its primitive state."

French Patent.

"*It is this fatty body* when it is pure, and which has experienced no modification either by heat or chemical agents, *which the cow reabsorbs into her economy in order to pass it into her mammæ;* after this passage the above fatty body is in fact scarcely modified and becomes the variety of fat called butter."

English Patent.

"7. TRANSFORMATION INTO BUTTER. The pure fat which has undergone no change by heat or chemical agents *is the same substance which the cow consumes in its organism in order to have it pass through the udder*

in the form of milk-fat or butter. The fat is therefore but butter in its original form.

Bavarian Patent.

It would be an astounding fact if a simple "mixture of oleine and margarine," agreeable in taste and smell, and capable, by churning with milk and mammary pepsin, of being transformed into a palatable table butter, could be one substance in America and another substance in Europe! And it would be still more astounding to discover that an American cow does not "reabsorb" the same substance into her mammary glands, in order to produce her milk, that a European cow does! But even this suggestion could not, if true, avail the complainants, for Mege, a Frenchman, was, in his American as well as in his foreign patents, describing a European product and the physiological process of European cows!

EIGHTH:

The table butter, produced by churning this oleomargarine with milk or caseine and mammary pepsin, is declared in the foreign patents to be substantially the same substance as natural butter, and to be distinguished therefrom only by its greater cheapness and its less liability to deterioration.

It is "a variety of real butter taken from its source, and made as in the milk secretion, but superior to milk-butter as to its preservation." . . . "Superior to ordinary butter for the purposes of consumption and of preservation."

French Patent.

"A variety of true butter taken at its source, formed as in ordinary lactation, and superior to butter from milk by the length of its preservation." . . . "Superior to ordinary butter in its use for food and in its preservation."

English Patent.

"Which does not become rancid and which keeps fresh for a long time."

Austrian Patent.

"Especially intended to benefit the navy" (of *Bavaria !*) "and the less wealthy classes by furnishing excellent edible and preservable fats at a price considerably lower than that of present similar products, for instance, butter and the finer grades of fats. The reduction in the price of butter will, in a large measure, contrjbute to the general wealth." . . . "Differs only from ordinary butter by keeping fresh for a much longer length of time." . . .

"Butter thus prepared keeps longer than milk butter."

Bavarian Patent.

NINTH:

The absence of disagreeable flavor and smell in this oleomargarine oil, made, as the complainants contend, under their American patent, is declared by their experts to be due to the separation of the oil at so low a temperature as will avoid decomposing the tissue by heat, or, in other words, cooking it; and this quality, when found in animal fat deprived of its tissue and stearine, they declare to be decisively characteristic of their patented product; while the separation at a low temperature (to wit, below the cooking temperature), they declare to be the essential element of their patented process.

(Morton, pp. 98 to 101, Ans. 11–16; Chandler, Id. p. 154, Ans. 11, 12).

Precisely this quality is declared in the foreign patents not only to be characteristic of the product therein described, but to result from precisely the same cause.

1. The English, French and Bavarian patents all set forth the fact that the fat, as it naturally exists in the animal, is free from said disagreeable qualities, and that those qualities, when they are found in rendered fat, are due either to fermentation, *heat*, or chemical agents, employed in the rendering. The English patent states these facts as follows:

"The invention is based on the deductions of modern science which *prove*, first, that odoriferous coloring matters, volatile and becoming rancid (aeres et rancissantes) *do not pre-exist in the natural suets* (graisses en branches); second, *that they are developed by the action of the organized*

tissues under the influence of fermentation, *of heat* or of chemical agents; third, that the fats of milk are only grease from fat modified first by its cellular tissue and afterwards by the organized tissues of the udder."

Here is a concise and clear statement, first, that these deleterious qualities *do not pre-exist in the fat itself;* second, that they are developed *by the rendering processes;* third, that they come from the *tissue*, and not from the fat itself; and fourth, that it is either *the heat*, or fermentation, or chemical agents employed in rendering, which produce them. From this statement the public would understand at once that, in order to obtain the fat as it naturally pre-exists, and without alteration, *undue heat must be avoided in the rendering process*, as well as fermentation or deleterious chemical agents. *This underlying principle was set forth so clearly that it could not be misunderstood nor overlooked.*

2. This principle was then declared to be applied industrially in the process described in the foreign patents, and the result of its application was stated, thus:

"In *applying these facts* industrially there is obtained from suet, first, a virgin fat without any savor or odor of fat and like the best fatty bodies; second, a variety of real butter, taken at its source, formed as in ordinary lactation and superior to butter from milk by the length of its preservation."

3. In the foreign patents as well as in the American patent, the suet is directed to be melted, by the aid of artificial gastric juice, at 103° Fahrenheit, the animal temperature.

4. Of this fat, thus melted at a low temperature, separated from tissue, and with its stearine removed, the English patent (paragraph VII) declares:

"*It is this fatty body* when it is pure and *which has experienced no modification* either *by heat* or by chemical agents, that the cow reabsorbs into her economy in order to pass it into her mammæ; after this passage the above fatty body is in fact scarcely modified, and becomes the variety of fat called butter. . . . It must not be forgotten that pure yellow fat obtained by the process above described is nothing but butter in its primitive state."

The Bavarian patent (paragraph 7) and the French patent (paragraph 6) make substantially the same statement. Here, then, is a decisive direction that the fat, in the melting or rendering process, must be allowed to experience no "modification" (English patent) or "change" (French and Bavarian patents) by "heat."

Thus, by the foreign patents, the public are informed that the undesirable taste and smell do not naturally exist in the fat; that such taste and smell are "developed" by undue heat in the melting; that such development is due to the tissues becoming altered or changed by the heat; directions are given to melt at 103° F., using gastric juice, among other purposes to facilitate the melting at that low temperature; and, after the removal of the tissues and stearine, the resulting oil is declared to be the mixture of oleine and margarine, unaltered by heat, which the cow reabsorbs into her mammary glands in order to form milk or butter and to be substantially the same as butter. In other words, the foreign patented process may be exactly described in the apt words which the inventor uses in the American patent, to wit:

"*This invention*, which is the result of physiological investigations, *consists of artificially producing the natural work which is performed by the cow when it reabsorbs its fat in order to transform the same into butter.*"

The public were, by the foreign patents, particularly warned that undue heat was a thing essentially and necessarily to be guarded against in the melting of fat for kitchen or table purposes; and the reason of it was fully and plainly given. The quality of the product which adapted it to be used as a substitute for butter, was, in the most unmistakable language declared to result from the absence of such a degree of heat as would alter or cook the tissue.

TENTH:

Another fact evidences, *to a mathematical demonstration*, the absolute identity of the products produced by the pro-

cesses set forth in the American and foreign patents, to wit: The oil produced by both is a mere mixture of sweet and palatable margarine and oleine, from which the stearine and the cell-tissue have been substantially removed. *Now, as described both in the American and foreign patents, the amount of margarine and oleine, in said mixture, is substantially the amount of margarine and oleine naturally contained in the fat.*

1. In the American patent (Paragraph III) the fatty matter, *i. e.*, margarine, oleine, and stearine, must "*completely separate*" in the melting process, and, by that process, the separation is declared to be "*well made.*"

In the French patent (Paragraph 2) "all the fat" is extracted by the melting and separating process. The same statement is made in the English patent (Paragraph 2), Austrian patent (Paragraph 2) and Bavarian patent (Paragraph 2.)

2. *All* the fat (*i. e.*, margarine, oleine and stearine) having thus been melted and separated from the tissue, as stated in all five of the patents, the next step is the removal of the stearine from the margarine and oleine.

In the American patent (Paragraph V), the stearine is declared to be "entirely exhausted" from the oleomargarine, by means of the centrifugal, or the centrifugal and press,

In the French, English and Austrian patents, the pressing operation is represented as removing the "hard constituent which renders the fat granular and causes it to congeal rapidly and to stick to the palate." When this substance is separated (by remaining in the cloths) the liquid residue is declared to be "a mixture of margarine and oleine." In the Bavarian patent the same statements are made, and also the further statement that "the solid residue taken

out of the cloth is good *stearine*, fit for making candles immediately."

3. It appears, therefore, in the American as well as in all the foreign patents, that the product obtained by the described processes consists simply of *all the margarine and oleine there is in the animal fat.*

Take, for example, 100 lbs. of raw fat and treat it by the process described in the foreign patents, and we get, as a product, simply all the margarine and oleine there was in it; treat it by the process described in the American patent, and we get as a product simply all the margarine and oleine there was in it. It is evident, therefore, to a mathematical demonstration, that the two products are one and the same material. *They both consist simply of all the oleomargarine there is in the fat treated*, separated from tissue and stearine, unaltered by heat, without any unpleasant odor or taste, and fit to be used in making good oleomargarine butter.

The complainant's experts say:—

"There is no process by which the Mege product" (American patent) "can be produced except that of the Mege patent or *its substantial equivalents.*"

Morton, p. 104, Ans. 22.

"Q. 18. In your opinion, is there any other way of producing the butter product of the Mege patent" (American), "especially of the first five divisions of that patent, except by a *substantial compliance* with the *processes* and *means* described in such divisions?

"A. *There is not.*"

Chandler, p. 156, Ans. 18.

The products of the American and foreign patents being, as therein described, the same identical substance, it follows conclusively, on the complainants' own showing, that the processes of those five patents, if not the same in mere details, are *all mere equivalents of each other.*

No wonder, then, that Mege himself, one of the most

celebrated chemists and scientists in France, declared in his affidavit filed in the Patent Office in December, 1873, that the invention for which he was seeking the American patent had already been patented to him in France on July 15, 1869, and that he made that statement on oath, conscientiously believing the same to be true! Nor that the complainant's assignor, the United States Dairy Co., in 1876, under the advice of its counsel, and its expert, Mott, repeated, in its sworn bill in equity against Mr. Fairbank, the same decisive statement!

ELEVENTH:

There is still another point of resemblance between the American and foreign products, which all five of the patents treat as a distinguishing characteristic of the Mege oleomargarine, although the complainants' experts affect to regard it as a mere matter of misdescription, because, on the theory that Mege knew what he was talking about, and used language correctly to denote what he meant, this quality was an essential characteristic, and its absence from the defendant's oleomargarine oil would conclusively prove non-infringement. We refer to the butter taste of the oil.

That this taste was regarded by Mege as an essential characteristic of his oleomargarine oil, *and was deemed by him to have been produced by the action of the artificial gastric juice*, the American and foreign patents, in our judgment, leave no reasonable doubt.

That the defendant's oil, and other similar oils produced by rendering at a low temperature without gastric juice, do not have this peculiar taste, is no proof that Mege incorrectly described *his* oil, but is, on the other hand, evidence that such oils are different from his oil, and that the use of gastric juice produced, and was designed to produce, the butter taste in the product.

Now, as to the facts :—

1. The American and all the foreign patents describe the use of gastric juice at a temperature of 103° F. (or at the animal heat) as an essential and necessary procedure in the melting of the fats. None of the patents intimate that this gastric juice can be dispensed with, or that any equivalent for it in this process is known. It is "the only step which, considered by itself, was new in the art of rendering animal fats."

Morton, p. 125, Ans. 97; p. 232, Ans. 25, 26.

Being an entirely new step in the art, there could, of course, be no known equivalent for it.

Mege nowhere in the American patent states or even intimates that it can be omitted.

Morton, p. 125, 126, Ans. 99.

2. Fat melted by the aid of this gastric juice at 103° F. has, both before and after the removal of the stearine by the press, the peculiar taste of molten butter.

"This greasy matter must not have any taste of fat. It must, *on the contrary*, have the taste of *molten butter*."

American Patent, Paragraph III.

And this was true both of Mege's melted fat *before* separating the stearine, and of his melted butter or oleomargarine oil *after* separating the stearine.

Morton, p. 142, Ans. 163.

"Resembling lard in composition, and of about *the taste of fresh butter*."

Bavarian Patent, Paragraph 4.

"Lost the odor of animal fat, but have *obtained a particular taste*."

Bavarian Patent, Paragraph 2.

"Of a composition like lard, but of a *superior flavor*."

French Patent, Paragraph 3.

These extracts show, beyond question, that Mege was carefully and intelligently comparing his melted fat with other

sweet, pure fats like lard, and that he found their *composition* substantially alike, but *their taste substantially different*, his melted substance having the distinctive taste of *butter* and the other fats *not* having such taste. Mege was a careful observer, and his statements are entitled to great weight.

3. Professor Barker (pp. 388, 389, Ans. 14–17), one of the most eminent scientists of this country, a distinguished chemist, and formerly President of the American Association for the Advancement of Science, (p. 377), testifies that he, on two occasions, operated the Mege digestive process of the American patent, and produced the Mege product and compared it with the defendant's oil. He found the defendant's oil to be

"A perfectly neutral fat, *having neither odor nor flavor*. Upon taking it to the mouth it has the well known fatty feel upon the tongue. Before expression, the presence of the stearine causes it to solidify more readily, and it becomes sticky. After expression, the oil is equally bland and neutral, and equally devoid of taste or odor."

(p. 388, Ans. 14; also p. 396, Ans. 44).

But, as to the Mege oil, produced by himself in his said two experiments, he says:

"The product of the Mege process, before expression, has *a peculiar and very decided odor and taste resembling butter*, which taste and odor are also retained in the product after separation from the membranes. *This flavor is decided, and is the exact taste referred to in the present patent as 'the taste of molten butter.'* My conclusion is that the products are quite different in their character, each being the product of a different process, specially adapted to the end desired by their different organizations."

(p. 388, Ans. 14).

"As already stated, the product, both before and after expression, *had a decided odor and taste, resembling that of butter*."

(Bottom of p. 389).

"The peculiar butter taste, to which I referred, as having been observed in the product of the Mege process, is *the special flavor well known to characterize butter* whether melted or unmelted."

(p. 406, Ans. 86).

Prof. Barker came to the conclusion, from his own careful comparison of the products and processes as well as from the reading of the patents, that Mege designed and used the gastric juice to perform two functions, viz: first, "to dissolve the membranes," and, second, "to produce the taste of butter." (Ans. 67, 68, 69, 70, pp. 402 to 404.)

4. Mege, in his first reissue (p. 466) described the oleomargarine produced by his process, as "composed, like butter, of oleine, margarine, *and a little odoriferous oil.*" This statement was taken almost bodily from his prior *French patent* (p. 477, paragraph 4), where the product is described to "consist like butter, of margarine, oleine, and *a small amount of volatile oil.*"

Prof. Chandler, complainant's expert, when asked to explain this, replied:

"*Mege found that his oleomargarine possessed the properties of butter.* He knew that it contained oleine and margarine, and when he applied it to his tongue he found that to the taste, and unavoidably, to some extent, to the nose, as it is impossible to make one of these tests without making the other, *he found that it possessed the flavor*, that is, the taste and odor combined *of butter*. Most substances in nature owe their peculiar odors to odoriferous oils, *and he inferred that the odor in this case was due to an oily body.*"

(p. 186, Ans. 82).

Prof. Barker agrees with Prof. Chandler in the opinion above expressed by the latter. (p. 406, Ans. 87.)

The flavor of butter is due to an odoriferous volatile oil known as *butyrine*, which is found in no other fat except butter.

Morton, p. 141, Ans. 154, 155.

Chandler, Id. p. 155, Ans. 15.

It would appear, therefore, to be beyond question that the Mege oleomargarine oil had the specific flavor of butter, and that such flavor was due to the presence of butyrine in the product. Mege was aiming to "artificially produce the

natural work which is performed by the cow," and, without the element, butyrine, in the product, he would have failed to produce that work.

How does this butyrine get into the digested product of the Mege process, and into milk and butter?

The scientists do not know how milk is secreted by the animal, and therefore can give us no information as to how butyrine becomes a constituent element of it. *Mege* believed the milk to be formed by the animal's reabsorbing its own fat through the mammary glands. *Prof. Morton* confesses his entire ignorance; he only knows that it is accomplished

' by some physiological process or other, about which I pretend to know nothing" (p. 107, Ans. 10).

Prof. Chandler testifies as follows:

"C. Q. 72. Is it not the weight of later authorities that the cow secretes the milk by the lacteal organs directly from the food products?

"A. I have not studied recent authorities on this subject very fully. All vegetable food contains fat, and it is probable that a transformation can be produced of the sugar, starch and similar substances contained in the food by which an additional quality of fat is produced. These fats are either stored up in the adipose tissue entirely, or they are partly oxydized or destroyed in the body, or they are partly extracted by the lacteal glands, and delivered in the form of milk by the female mammals" (p. 183).

In the presence of this total ignorance as to how milk itself is secreted, it is useless to inquire how butyrine becomes a constituent element of milk. Butyrine is *not* an element of animal fat; it *is* an element of milk: it is *not* an element of the defendant's oleomargarine oil produced by rendering *without* digestion; it *is* an element of the Mege oil produced by melting *with* digestion. And that is all we know positively about it.

But the following facts are exceedingly significant, leading to the conclusion that the butyrine of milk, and the

butyrine of Mege's process, *are produced by the action of the gastric juice*, and tending to strongly corroborate the opinion of Prof. Barker above referred to, to wit:

First. The fact, referred to by Prof. Barker, that butyrine is not found in fats rendered by heat alone, but is found in fats melted by Mege's artificial digestion.

Second. The fact that butyrine is found in the fæces and in urine—*direct products of digestion* (near top of p. 148, Extract from Foster's Physiology); also "in various kinds of *decomposing* vegetables and animal matter" (top of p. 148, Extract from Fowne's Chemistry); also in the products of "the fermentation of sugar, starch and lactic acid" (p. 147, Extract from Angel and Helmar's work on "Butter—its Analysis and Adulterations"); also *in the stomach*, as the result of the fermentation or decomposition of food therein (bottom of p. 148, Extract from Foster's Physiology).*

Third. The fact that Mege, as stated in his first reissue and in his French patent, found a little odoriferous and volatile oil in the digested product, which odoriferous substance (probably butyrine) is not characteristic of the natural fat nor of fat rendered by heat alone, but only of the digested product.

Fourth. A great light is thrown upon this obscure subject when we compare together the two steps denominated by Mege, in his foreign patents, "artificial digestion" and "decolorization."

The step, "decolorization," in all the foreign patents, im-

*NOTE. Prof. Morton, appreciating the damaging effect of this latter fact upon his theories, tries to dodge it by *assuming* that butyrine, when found in the stomach, must have been introduced there in the food instead of being manufactured there by the action of the gastric juice on the food; *but he brings no facts and no authorities in support of his assumption.*

mediately follows the production and separation of the oleomargarine oil, and renders the qualities of said oil more closely approximate to those of natural dairy butter in a molten condition.

Let us compare these two steps, and their results.

In all the foreign patents, the artificial gastric juice is prepared by the maceration or infusion of a pig's or sheep's stomach with *acidulated* water; and the digestion with this liquid destroys the natural fatty taste of the animal fats and produces instead a "delicate" taste (English and French patents, paragraph 2), a fine taste (Austrian patent, paragraph 2), a "particular taste" (Bavarian patent, paragraph 2), which is "about the taste of fresh butter" (Id., paragraph 4). So much for digestion with gastric juice and *acidulated* water.

In all the foreign patents the "decolorization" is effected by the use of some *fine acid*, and muriatic (*hydrochloric*) acid is recommended for the purpose. The result is a partial removal of the color of the oleomargarine oil, *and an increase of the intensity of the peculiar taste to such an extent that it now suggests faintly the flavor of almonds*—a taste "hitherto unknown of animal fats!" This intensifying of the taste is, beyond all question or doubt, *due to the use of the hydrochloric acid*, for this, diluted with water, is the only agent employed in its production. The acid is carefully washed off after this taste has been produced.

Now, it so happens that *the acidity of natural gastric juice is due to the presence therein of free hydrochloric acid.*

Foster's Physiology, quoted on p. 148, near the bottom of the page, says of gastric juice:

"The reaction is distinctly acid, *and the acidity is normally due to free hydrochloric acid.*"

Prof. Morton says (p. 149, Ans. 185) that the "statement that gastric juice contains free butyric acid and does not

contain free hydrochloric, *has long been known to be entirely untrue.*" On p. 238, near end of folio 348, he says that "gastric juice consists of a mixture of pepsin with one or more various acids and water (the most powerful acid is hydrochloric.)"

He further states (pp. 238, 239, 240, Ans. 34, 35), that pepsin alone, without the aid of a small percentage of acid, and preferably dilute hydrochloric acid, *produces no digestive action whatever*, (p. 239, near end of folio 350), and that, "in order that pepsin should exhibit its power in this connection, a certain amount of *hydrochloric or other acid* must be present, and this proportion must not much exceed two tenths of of one per cent. of the water, which must also be present in a very considerable quantity." At the bottom of p. 239 he says, referring to hydrochloric acid in gastric juice,

> "It is, moreover, just as essential to the activity of the gastric juice as is the pepsin itself, and, therefore, while we may say that in a certain sense pepsin is the active element when the hydrochloric acid is present, we might also say, with equal propriety, that the hydrochloric acid was the active element in the presence of the pepsin."

And, on p. 238, he quotes with approval, from Foster's Physiology, a full statement of the character and mode of operation of gastric juice, dwelling upon the presence of hydrochloric acid therein and its necessity as a component part of the liquid.

Now, then, applying these facts to the matter before us:

1. Mege, in all his patents, (foreign and American), used, for his artificial digestive step, a gastric juice, derived from the stomach of a sheep or pig, and therefore necessarily containing free hydrochloric acid. *It could not digest without the presence of the acid*, and therefore the fact of digestion proves the fact of the actual and active presence of the acid during this step of his process. And this is as true of his American process as of his foreign processes.

2. *This acid, in its action upon the elements oleine and margarine of animal fat, has the effect to produce a peculiar flavor in them.* If applied in sufficient quantity, it raises this flavor even so as to cause it to approximate that of almonds—a flavor resembling that of butter, but stronger and more decided.

3. As this acid, in its action upon the elements of animal fat, raises the almond flavor in the decolorization step of the process, *it must necessarily tend to raise the same flavor in the artificial digestion step of the process*; and, in view of the facts made known by Mege about its peculiar action in this respect, *it is not conceivable that it could be present during the step of artificial digestion without affecting more or less the taste and smell of the resulting product.*

4. The chemical composition of butyrine shows that the gastric juice could, by proper chemical reactions, develop it from animal fats. It is composed of carbon, hydrogen and oxygen. (Bottom of p. 147). Fats are composed of carbon, hydrogen and oxygen; and dilute hydrochloric acid is composed of oxygen, hydrogen and chlorine. With due reactions, these substances could combine in the exact proportions stated in the books to be the composition of butyrine. No efforts appear to have ever been made to determine experimentally the exact products produced by the action of gastric juice, or hydrochloric acid, upon animal fats, but that butyrine may be one of such products is easily possible, and is clearly indicated by Prof. Barker's experiments above alluded to, as well as by Mege's statements in his various patents, by the peculiar effect of the hydrochloric acid in the decolorizing step, and by the finding of butyrine in the urine, fæces, and stomach of animals.

5. Assuming this reaction, the butter taste declared by Mege to be characteristic of his digested fats and the almond taste declared by him to be characteristic of his "decolor-

ized" oleomargarine oil, become easily and readily explained; without assuming it, the facts stated by him are totally inexplicable.

6. It is of no consequence that scientists have been hitherto ignorant of the fact; their knowledge may be evidence, in proper cases; their *ignorance* is not. The discovery is not the discovery of Prof. Barker, as Prof. Wheeler intimates, (p. 274, Ans. 12), but the discovery of Mr. Mege, who not only announced the butter taste as following the digestion of the fat, but also clearly announced the peculiar action of hydrochloric acid (the acid of gastric juice) by describing its effect upon the taste of the fat in his decolorizing step. Even after he had announced these facts the scientists failed to grasp their meaning, but that is not his fault.

The two *products* patented in Europe and America having thus been shown to be identical, it follows, even on the authority of complainant's experts, that the two *processes* are substantial equivalents of each other. Mege, in his affidavit of December 13, 1873, declared them to be the same invention. The theory that they are not is a very recent discovery of the complainant's.

Let us now compare the two *processes* directly with each other.

The process by which the oleomargarine oil is obtained consists, both in the American and foreign patents, of five steps, viz:—

1. Preparation of the fat for crushing.
2. Crushing.
3. Artificial digestion.
4. Crystallization.
5. Separation of the stearine by pressure.

These steps are given different names under the different patents, but the terms which we have here employed to designate them indicate their true characteristics and distinctions. Two of the steps, "crushing" and "separation of the stearine by pressure," are mechanical; the other three are chemical.

1st Step. Preparation of the fat for crushing. This preparation is merely *preservative.* In the foreign patents it is accomplished by *washing;* in the American, by *salting.* The washing *removes* from the fat *the blood and other matters liable to putrefy:* the salting allows such matters to remain in the fat, but *prevents their putrefaction.* The result is practically the same in both cases.

"To accomplish this result he realized that, in the first place, a very thorough washing must be effected *in order to remove every trace of blood and other material subject to rapid putrefaction, which would be likely to develop offensive odors during the process of gastric digestion.*"

Morton, p. 230, near middle of page.

"Removing such materials as would be the cause of injurious results."

Id., p. 231, Ans. 22.

"This first section of the foreign patents, headed 'Complete Washing,' I find to be a simple description of a method for '*thoroughly freeing the fat from all objectionable material prior to the second step, that of artificial digestion.*'"

Chittenden, p. 283, near bottom.

"The necessities for the thorough washing are, to my mind, the following: first, in view of the long time which the fatty matter, according to the carrying out of the process, must be exposed at the temperature of the animal body to the action of a large quantity of artificial gastric juice, it is evidently *necessary that all traces of blood or adhering muscle tissue* should be removed as far as possible, *since, as is well known, such substances are exceedingly prone to decay*, especially at the body temperature, and thus give rise to deleterious and even offensive products which might materially affect the character of any fatty product obtained."

Id., p. 284, folio 414.

"In the Mege specification" (American patent) "it is directed to use

water containing sea-salt and sulphate of soda, *as a preservation of the fat previous to its disintegration.*"

Morton, p. 104, Ans. 21.

Prof. Morton also regards "fresh" fat as the equivalent of "preserved" fat, for the purposes of immediate crushing and digestion (see his Answers, 20, p. 103, and 34, p. 115).

Prof. Chandler, referring to the American patent, says:

"The first step, the neutralization of the ferments, *is really a cleansing process*, and has for its object the removal of blood and other soluble substances, and in addition to this involves the use of antiseptics *to prevent the fermentation or decomposition of any of the substances naturally associated with the fat, which decomposition would result in impairing the quality of the fat by developing offensive odors and flavors*" (p. 152, Ans. 9).

The Court will, it is submitted, take judicial knowledge that salting is old, and has for thousands of years been employed to prevent the fermenting or decomposing of blood and other rapidly putrefying matters in meats and fats. But the complainants, desirous of proving the fact, specially cross-examined Prof. Barker with reference thereto, and proved it by his testimony (pp. 401, 402, Ans. 64, 65). And the complainants treat the use of ice as a complete equivalent for Mege's sea-salt and sulphate of soda. (See Cross-Question 64, p. 401, also testimony of Morton, Ans. 21, near end of folio 160, p. 104; Id., p. 120, Ans. 71; Id., p. 122, Ans. 81, 84.)

The process of washing (foreign patents) and salting (American patent) are, therefore, clearly the equivalents of each other for the purposes for which both were used by Mege; and not only equivalents, but perfectly well known equivalents. Mege invented neither of them, but simply applied, in this first step, his knowledge of the art and his judgment in the choice of known means. The washing is unnecessary when the salting of the American patent, or the ice of the defendant, is used. (Morton, p. 228, Ans. 19.)

2d Step. Crushing. This step was preparatory to the

artificial digestion, but, like the first step, above referred to, it was not new with Mege, but was already well known as an essential step preparatory to the artificial digestion of foods or other matters.

"The importance of the previous state of minute division and incorporation with aqueous fluid in promoting the operation of the gastric solvent has already been dwelt on."

Carpenter's Physiology, published in 1853, quoted on p. 229.

For a review of the testimony on this subject see *ante*, where the fact of the importance of this minute crushing as a preparation for all solutions of soluble substances is shown to have been held by the Supreme Court to have been a matter of common knowledge "for ages, whereof the memory of man runneth not to the contrary."

When Mege, a thorough chemist and physiologist, approached the subject of treating the fats with artificial gastric juice, he approached it with a complete knowledge of "the importance of the previous state of minute division and incorporation with aqueous fluid in promoting the operation of the gastric solvent," and he directed, *in all his patents*, that the fat be first crushed. In the French, English and Austrian patents, he directed that the crushing be effected between cylinders. In the Bavarian patent (of April 8, 1873, *only six months before filing his American application*,) he directed that the crushing be effected "*between the conical cogs on two iron cylinders*"—obviously a mode of securing very effectively the minute subdivision of the fat *and the rupturing of a very material proportion of the cell-sacks.* In the American patent, he directed that it be crushed between cylinders and then under millstones, and urged the importance of "a complete crushing."

It is perfectly obvious that the "crushing" of the foreign and American patents was directed and used by him in con-

sequence of his knowledge of its necessity as a preliminary to the artificial digestion, in order that the gastric juice might act more rapidly and thoroughly; and that he regarded the "crushing" of the foreign and American patents as equivalents.

Moreover, Paraf's patent of April 8, 1873 (applied for on February 11, 1873) had directed the hashing of the fat "*as fine as possible in a regular meat-hasher.*" Mege, at the time of filing his American application, Nov. 1, 1873, was chargeable with knowledge of Paraf's process. If he therein described any patentable improvement in the crushing step, over and above that set forth in his foreign patents, (which we deny), the date of such improvement must be taken, in the absence of all other proof, to have been the date of filing his application, Nov. 1, 1873, (*White* v. *Allen*, 2 Fish., 440; *Wing* v. *Richardson*, Id., 535), and therefore he was not the first inventor of such improvement.*

Yet the complainants' experts affect to regard the "crushing" of Mege's foreign patents as only having been intended for purposes of washing! Admitting him to have been perfectly familiar with the facts set forth by Carpenter and other writers on the subject nearly twenty years before his foreign inventions, that "minute division" was a necessary step preparatory to artificial digestion, and finding him in his foreign patents crushing the fat not only between cylinders, but *cogged* cylinders at that, they coolly undertake to assure the court that such crushing was not designed by him to facilitate the digestion, but only the cleansing of the fats! *He* declared in his affidavit of Dec. 13, 1873, that the two inventions were, in *his* understanding, one and the same thing; *they* assume to contradict him as to his own opinions and personal intentions and beliefs! Comment is unnecessary.

NOTE.—The defendant uses the "regular meat-hasher," referred to in Paraf's patent, and not the cylinders or millstones of Mege.

In assuming a theory with which to contradict him, they immediately fall into the most grotesque absurdities, and their arguments run into hopeless conflict with each other. Seizing upon the statement of the American patent, that the millstones "completely bruise *all* the cells," they argue that the foreign patents do not *state* that the crushing by cylinders bruises *all* the cells, and that, hence, the object of the foreign patents was not to liberate the fat from the cell-sacks by bruising all the cells, but by the action of the gastric juice alone; whereas, on the contrary, the object of the American patent was not to liberate the fat by the action of gastric juice, but by crushing *all* the cells and thus mechanically liberating it. Immediately confronted with the fact that *the American* patent *also uses the gastric juice*, and asked to explain this fact on their theory, *they then admit that the crushing does not "completely bruise all the cells,"* and *might not rupture any of them*, (Morton, p. 224, end of Answer 9), and hence, that the gastric juice is still retained by Mege *to dissolve such of the cells as were not previously crushed*, (Morton, p. 101, Ans. 16; p. 133, Ans. 131; p. 224, Ans. 9), and that a "*more perfect comminution*" is effected by "the modern hasher" than by cylinders and millstones! (See Morton, pp. 115, Ans. 36; 222, 223, Ans. 6, 7; 223, near the bottom; 224, Ans. 9, 10.) And they admit that they never experimented, nor saw any experiment with a millstone in crushing fat (Morton, pp. 221, 222, Ans. 1, 2; page 222, Ans. 6), and therefore know nothing of the subject about which they modestly assume to instruct the court!

Still further; having admitted that the millstones do not so completely bruise all the cells as to dispense with the gastric juice "as an aid to the mechanical process of grinding or comminuting" (Morton, p. 101, Ans. 16; p. 115, Ans. 34), and that the modern hasher produces a more perfect comminution than even the millstones, they acknowledge that they are "perfectly aware of the fact that *even when using the hash-*

ers, there is a portion of the fat so entrapped in the tissues that the hasher and the subsequent melting do not liberate it, and that this fat has to be afterwards crushed out at a high temperature and sold as tallow. (Morton, p. 246, Ans. 45.) *And then* they draw the fine distinction that they did not mean "all the cells" but "*all the fat which can be obtained fit for use as a food product!*" (Same answer.)

And, finally, to cap the climax, they admit that Mege knew, when he took out his foreign patents, "that digestion was facilitated by the comminution of the animal matter," and "no doubt knew that as far as this digestion was concerned, *it could be thoroughly effected under the conditions he prescribes* (in his foreign patents) *without the aid of any more thorough breaking up of the fat than that which was required for its complete cleansing*." (Morton, p. 231, Ans. 22.) In other words, he knew, in his foreign patents, that the crushing there directed was *sufficient* for the purposes of the succeeding step of artificial digestion!

It is perfectly obvious that this fine-spun theory of complainants' professional experts relative to the alleged differences in crushing, was manufactured out of whole cloth for the purposes of this case; but what becomes of it when *both* processes require artificial digestion, and when the crushing of the foreign patents was known by Mege to be *sufficient* for the purposes of the artificial digestion?

One argument of complainants' experts is exceedingly funny as a specimen of logical boomerang. It is, that because hashers were known at the date of Mege's American patent, he must therefore be considered to have included them in his patent as known equivalents of millstones, for the purposes of crushing fat. (Morton, p. 226, near end of folio 331; also p. 227, Ans. 15.) *But they were known prior to his Bavarian patent of April 8, 1873* (see Paraf patent of April 8, 1873, application filed Feb. 11, 1873, where they

are referred to as known in the art and needing no description), and hence were, on like grounds, included *in his prior Bavarian patent* as known equivalents of the cogged cylinders therein referred to. Suppose anybody in Bavaria, in the year 1874, had used the Mege process with the substitution of "the modern hasher" for the cogged cylinders,—is there any doubt that the Bavarian courts would have held it a mere substitution of equivalents?

Another fine-spun distinction set up by Prof. Morton (pp. 225, 226, Ans. 11), is exceedingly characteristic of the professional expert, at his wits' end to discover differences where none exist, viz: his argument that the millstones and hashers are equivalents because they *grind* the fat, while the rolls are not their equivalents because they only *crush* the fat. But how about the cogged iron cylinders of the Bavarian patent? Do they not grind the fat? From the moment when any two cogs come into contact till they finally pass out of contact, *they slide against each other*, producing a true grinding action. No mechanic who ever saw cogs in operation could be found to say that their action is not a grinding action. And the grinding action, in preparing fats for rendering, was also a known equivalent of crushing, long before the date of Mege's Bavarian patent. (See extract from Lunel's Treatise, published in 1864, referring to such grinding in a mortar.)

But Mege himself was entirely unconscious of this subtle distinction between "grinding" and "crushing"—*he called it "crushing" even in his American patent.* He was dealing with facts, and called them by their proper names, without involving himself in the subtleties and sophistries of the hired professional expert. Prof. Barker disposes of the whole subject in a few common-sense words:

"The second step entitled 'Crushing' is an obvious requirement and had been long in use in the arts for similar purposes. Comminution facili-

tates treatment because it increases the surface to be acted upon." (Ans. 5, bottom of p. 378.)

Even as late as September, 1878, the complainants' assignor and its patent experts treated the cylinders and millstones as mere equivalents. In taking out the second reissue of the Mege patent, dated Sept. 24, 1878 (see p. 470), they made Mege say:

"In carrying out my process, I first *crush, grind or disintegrate* the fat by *any* suitable machinery, such as rollers *or* millstones, in order to break up the cellular tissues in which the fat is contained in the animal, and thus cause it to be *more easily melted*," etc., etc.

This same statement is also to be found in the *first* reissue, dated May 12, 1874. And this continued to be the express declaration of the patent itself from May 12, 1874, down to June 13, 1882,—a declaration entirely cutting the ground from under the complainants, so far as concerns their present position on this question of crushing the fats.

In closing the discussion of the crushing step of the process, Prof. Morton's *emulsion theory* may deserve a moment's notice. This theory is, that, as Mege used water with his crushing cylinders in the foreign patents, he could not have intended the cylinders to bruise the cells, because the fats would, in that case, have formed an emulsion with the water—"*an emulsion from which the fat would not separate in any reasonable time.*" (Morton, p. 227, Ans. 16.)

But—

1. It is strange that neither Mege nor the complainants' assignor nor its skilled experts thought of this when they took out the *first* reissue of the American patent, dated May 12, 1874, in which they said:

"The first step preparatory to the process of separation is to *crush, grind or disintegrate* the fat by *any* suitable machinery, such as rollers *or* millstones, *and to wash it by a stream of pure water, which may be poured on it while the act of disintegration is being performed* until it is as free as possible of everything soluble or separable by water."

2. In the practical operation, as carried on in this country, *a stream of water from one-eighth to one-quarter of an inch in thickness* runs into the melting kettle with the hashed fat, *for an hour at a time.* (Morton, pp. 250, 251, Ans. 52, 55.) Why does not the emulsion there supervene, "from which the fat would not separate in any reasonable time?"

3. This stream of water comes from the ice-water from which the fat is taken, dripping, to be hashed. But Mege, in his American patent, takes the fat, dripping, from the salt brine, so that a similar stream of water would run with it into the cylinders and millstones. Why does not the emulsion there form and prevent the separation "in any reasonable time?"

4. In the Paraf patent, the fat is melted with its own weight of *water*—no "emulsion" was feared by Paraf, who "was a chemist of ability" (Chandler, p. 170, Ans. 8), and who had thoroughly experimented on this subject (pp. 170 to 173, Ans. 8 to 26). *In the first Mege reissue*, when trying to cover the prior process of Paraf, Mege, or the owners of the patent, in his name, said: "Or the fat may be melted in water"—evidently fearing nothing from the supposititious emulsion bugbear.

The arguments used to show that the "crushing" steps of the American and foreign patents are different, are simply the arguments of professional experts, skilled in hair-splitting, trying to make something out of nothing. The affidavit of Mege, that his American application was for the same invention patented to him in France in July, 1869, is of more weight than volumes of such stuff. The cell-sacks are microscopic—only .007874 of an inch in diameter (p. 128, Ans. 107, 108). When an expert gets to telling the court what would happen to these invisible cells by the operation of cogged cylinders, or the operation of mill-

stones (neither of which operations he has ever witnessed), he is merely drawing on his imagination.

The simple facts that comminution was known to be necessary before treating any substance with artificial gastric juice; that the reason of this fact was also well known; that the comminution of the foreign patents was sufficient for the purposes of the gastric juice treatment there; and that the comminution of the American patent, whether more or less, is sufficient for the purposes of the gastric juice treatment here; render the comminutions in both cases mere equivalents of each other, and confirm the opinion of Mege himself that the American patent is for the same invention previously patented abroad. Besides, the minute comminution of fat by grinding, and even to the extent of "grinding it in a mortar," preparatory to rendering it, was well known in the arts as long ago as 1864, and is described in Lunel's Treatise of that date (Morton's Testimony, p. 123, Ans. 90, 91); and the comminution by hashers was known prior to Mege's Bavarian patent, as we have already seen; so that both were known equivalents of the comminution of the Bavarian patent.

3d Step. Artificial Digestion. When we get to this step, the complainants' experts surpass themselves. They first read out of the process the artificial gastric juice, as being entirely unnecessary thereto (obviously because the defendant does not use it); they next read out of the process the limitation to 103° F. (manifestly for the same reason), and read into it an additional temperature of about 20° F. (because the defendant *does* use the latter); they construe the patent broadly to catch the defendant, and narrowly to avoid the foreign patents and contradict Mege's affidavit; they invent wonderful theories *ad libitum* to account for their extraordinary opinions; they contradict each other on important points and contradict themselves on others

equally important; in a word, they reveal the professional expert in all his glory!

Their theory, on this step, is, that Mege crushed the fat so fine that but little gastric juice was required to complete the *melting* at 103° F., and consequently the gastric juice was non-essential; that when he said that he then "slowly raised the temperature to about 103° F. so that the matter shall completely separate," he did not thereby refer to the *melting separation*, but the *settling*—the separation into perfect limpidness caused by the melted oil appearing in a clear limpid body—and did not mean "about 103° F.," but, on the contrary, "about 115° to 125° F.;" and that the more perfect comminution by the modern hasher followed by melting at 120° F. is the full equivalent of the old crushing by millstones followed by gastric juice at 103° F.; and hence, that the defendant, who uses the process set forth in the stipulation printed on pp. 187, 188, infringes this part of the Mege process.

Their argument, on this third step, "Concentrated Digestion," may be divided into two heads—*first*, the argument that Mege, in his American patent, contemplated a "separating" or *settling* step, in which, after the melting was accomplished at 103° F., he raised the temperature from ten to fifteen degrees or more to secure perfect limpidness of the melted oil; *second*, the argument that the artificial digestion was made immaterial in his American patent, and can therefore be omitted without departing from his invention or claims.

We will consider these two points in the order in which we have stated them.

First Point:

Prof. Morton's argument (p. 116, Ans 38), referring to the American patent, is: "He speaks of slowly raising the temperature to about 103° F., so that the matter shall com-

pletely separate. This I understand to be a direction to raise the temperature to this point *or above*, if necessary, *until the desired result of separation is obtained. I think it would be extremely difficult to secure such separation on a commercial scale, if the temperature were never raised above 103° F. with such fats as I have experimented on.*"

Prof. Wheeler's statement of the argument is as follows: "This increase of temperature to about 103° F. so that—or to employ my own language, expressing, I think, the idea of the inventor, *is in order that*—'the matter shall completely separate.' The corresponding descriptions in foreign patents contemplate and describe such a procedure as shall allow the fat to remain in contact with the artificial gastric juice, at the temperature of animal heat, 'until all the dissolved fat appears limpid on the surface.' In the American patent such a separation of the fat was, by the inventor, regarded as incomplete and unsatisfactory for this purpose, and hence he directs the application of a sufficient heat, about or in the vicinity of 103° Fahrenheit, but yet *adequate*, as he specifically states, 'so that the matter shall completely separate.'"

Wheeler, pp. 271, 272.

Prof. Chittenden repeats substantially the same statement. (p. 287, near middle of page)

The whole of these expert arguments is based on the following apparently clear statement in the American patent:—

"When the fat has descended in the vessel, he melted it by means of an artificial digestion, so that the heat does not exceed 103° Fahrenheit, and thus no taste of fat is produced. . . . He slowly raised the temperature to about 103° Fahrenheit, so that the matter shall completely separate."

The defendant melts at from 120° F. to 130° F., and then raises the temperature about five degrees, to settle (see stipulation, pp. 187, 188), and this is assumed by complainant's experts to infringe; so that, when Mege says he raises the temperature "to about 103° Fahrenheit," they assume that

he *meant* about from 125° to 135° Fahrenheit—*from twenty-two to thirty-two degrees higher than he himself stated.*

The terrible strain thus given to Mege's clear language is based entirely upon the words "so that the matter shall completely separate," because, as they say, the matter will *not* completely separate unless it is raised at least as high as about 120° F. (Morton, p. 135, Ans. 139.)

But, if the words "so that the matter shall completely separate," are controlling as to the temperature to be employed, even to the extent of overriding the declared limitation of 103° F., *then the same statement, in substance, in the foreign patents, is equally controlling as to the temperature to be employed* and, in that case, they also contemplate raising the temperature to 115° or 135° F., and thus clearly anticipate this step of the process.

"The whole is kept at the temperature of the animal body" (103° F.) "*until* ALL *the fat appears in a clear layer on the surface.*"

French Patent, Paragraph 2.

"The whole is kept at the temperature of animal heat until *all* the dissolved fat appears *limpid* on the surface."

English Prov. Spec'n, Paragraph 2.
English Patent, Paragraph 2.

"The mixture is kept at the temperature of the animal body, until the fat appears in a clear layer on the surface."

Austrian Patent, Paragraph 2.

"This mixture is then kept at the temperature of the animal body (by means of steam pipes or otherwise) until *all* the molten fat has been dissolved by the pepsin or the stomachs and appears in a clear layer on the surface."

Bavarian Patent, Paragraph 2.

"The *clear, fluid fat* is poured into vessels with an opening at the bottom and containing a layer of tepid water."

French Patent, Paragraph 3.
Austrian Patent, Paragraph 3.
Bavarian Patent, Paragraph 3.

The foreign patents, therefore, clearly direct that *all* the fat is to be so reduced as to become "clear," "fluid" and

"limpid"—certainly equivalent to directing that "the matter shall completely separate." If, therefore, the direction as to completely separating, in the American patent, is controlling as to temperature and such as to override the declared limit of "about 103° Fahrenheit," then the direction as to securing perfect limpidity, in the foreign patents, is, for precisely the same reason, controlling and such as to override the declared limit of "animal heat" (103° Fahrenheit); and both the American and foreign patents are equivalents in this as in all other respects. We submit that this proposition is demonstratively proved.

But the complainant's experts are ready, as usual, with what they call an answer to even this demonstrative proof. They say that in the American patent Mege clearly directed "two distinct steps" (see Morton, near bottom of p. 211; pp. 245, 246, Ans. 44.) viz: first, *melting* at or below 103° F., and, second, *separating or settling* at "about 103° F.;" whereas, they say, the foreign patents do not refer to *two* steps but only to *one*, that of melting at 103° F.

Let us see about this. The experts are evidently not so familiar with the foreign patents as they assume to be; *for the English patent directs in the clearest and most explicit language that the melting, and the separation or settling, shall be performed by two distinct and successive steps*, and, going farther than even the complainants assume of the American patent in that respect, *it does not limit the temperature of the settling step*, and it *gives that step so much importance as to describe it as a separate division of the process*, making it the "Third" division, or head, of the description, and entitling it "*III. Purification.*"

The English patent describes, as the *second* division of the process, "artificial digestion," at the temperature of the animal heat, "until all the dissolved fat appears limpid on the surface." Then "it is left to deposit, and the deposit is sub-

mitted to a new operation to extract all the fatty body which in this case has no smell of animal fat and all the odor of the most delicate fatty body."

Then, coming to the third division, it proceeds as follows:

"III. Purification. When the fat is melted it is passed through a seive from which it falls into *a tub immersed in hot water* where it is kept at the melting temperature *until it is absolutely limpid.*"

Here is a separate step of separation or settling (immediately following the melting) beyond all cavil or question. Not only is the step separate from the melting, *but it is performed in a separate vessel, just as the defendant does it.* In the *melting* process, the fat is directed to be kept at the animal temperature, but, in this third or *settling* step, it is to be kept at the "*melting temperature*" until it is *absolutely* limpid. The "melting temperature" of fat at which it will become "absolutely limpid" is stated by all the complainant's experts to be about 120° F. and is stated by the books to vary from 97° F. to 127° F., according to the kind of fat used, (pp. 135, 185), *beef fat melting at from 111° F. to 116.6° F.* (Id., p. 135). The only limitation of temperature imposed by the English patent upon the settling step of the process is that, as it is maintained by hot water in the water bath, it cannot be over 212° (the boiling point of water), and, as it is to be not less than the melting temperature of fat, it cannot be much, if any, under 120° F. In the clearness and explicitness of this direction to settle by a separate and distinct step, and to raise the temperature sufficiently to render the fat "absolutely limpid," the English patent far exceeds the American patent, even on the complainant's own theory.

After thus describing how to secure, by this separate settling, an absolute limpidity, the English patent then states, under the fourth division, that

"The fatty body, *liquid and limpid*, is poured into boxes which have an opening at the bottom and contain a layer of tepid water."

When, therefore, Prof. Morton (p. 214, folio 315), in mak-

ing an experiment to test the foreign process, turned on the steam and raised the temperature of the fat to about 128° F., and thereby effected a thorough separation of the pure fat from the aqueous fluid mingled with it, he did just what, and only what, the English patent directed him clearly to do.

So far as this settling step is concerned, we therefore submit:

1. That the American patent does *not* describe it as a separate step, and does *not* indicate that the temperature is to be raised above 103° F., but, as it reads, must be construed to absolutely limit the temperature to about 103° F. —which cannot be construed to mean the 125° to 135° F. employed by the defendant.

2. That the foreign patents *do* describe the settling as a separate step, and *do* leave the temperature unlimited, except that it must be somewhere between about 115° and 212° F., and, therefore, anticipated the complainant's patent, on their own theory.*

3. That not only is the American patent, in the comminution of the fat, the melting at a low temperature, the raising of the heat to settle the melted fat, and the production of "absolute limpidity," anticipated by the foreign patents, but also, in all essential particulars, by the Paraf patent of April 8, 1873.

4. That if the American patent was intended to cover any raising of the temperature above 103° F., it is void for uncertainty and ambiguity and as not complying with the provisions of Secs. 4888 and 4922 of the Statute.

5. That, if the American patent does *not* describe or indicate raising the temperature above 103° F., the defendant

*NOTE.—Morton admits that, in respect to the melting and settling, the English and French patents do not differ. (See end of Ans. 44, p. 246.) And it is clear that the French, Austrian and Bavarian patents do not differ from each other on this point.

does not infringe it, because he settles his fat at a higher and confessedly non-equivalent temperature; and if it *does* intend and imply such raising of the temperature, then it does not imply that the gastric juice is to be dispensed with as unnecessary in such case, and the defendant does not infringe, because he uses no gastric digestion.

SECOND POINT:

But, as we have seen, the complainants are not satisfied with the effort to raise Mege's temperature from 15 to 30 or more degrees higher than he described it;—*they also seek to cut loose from the artificial digestion altogether* and to substitute for it a mere process of *rendering* by heat alone! With all their ingenuity they can find no warrant for this *in the patent.* (Morton, top of p. 126, Ans. 99; Chandler, Id., p. 176, Ans. 37, 38.)

Having tortured the patent so as to render the whole operation mainly dependent upon the crushing and only to a very limited extent upon the digestion; and having raised the *settling temperature* to 115° F. and upwards, they now declare that the digestion is of no consequence whatever and may be omitted; and, with it *out goes the melting temperature of 103° F.*, which temperature, *so far as melting the fat is concerned*, they do not even pretend that Mege ever designed to exceed, and admit will not melt fat without the aid of gastric juice!

In other words, having assumed that Mege melted, by the aid of digestion, *at or under 103° F.*, and obtained thereby *a perfect melting* (Morton, p. 245, Ans. 45, and p. 212, folio 312), and then raised the temperature from 10° to 17° higher (Id., pp. 108, 134, 135, 218, 219, Ans. 16, 136, 139, 8, 11), to ensure a perfect *settling;* and that these processes, *melting* and *settling*, are *two distinct and successive steps* (Id., bottom of p. 211, p. 245, and top of p. 246), and that Mege directed them *both* to be used, *each for its particular purpose;* they

now throw away the former *because when the latter is used or the gastric juice omitted, the former is useless!*

On their own theory, this is a gross departure from the Mege process which contemplated both steps. *But it is something more—it disproves the theory*—for, *unless he considered the peculiar butter taste as coming from the action of the gastric juice*, it is simply incredible that Mege, if he contemplated raising the settling temperature as they now assume, should not also have made the discovery that the melting with gastric juice and animal temperature was, in such case, totally unnecessary!*

When the complainant's experts attack the subject of Mege's digestive *melting* (as distinguished by them from the separation or rendering limpid, or, in other words, *settling*) then comes richness! First. We are told by Prof. Morton that, in the foreign patents "a large amount of gastric juice is directed to be used" (p. 230, folio 338) and "is exclusively relied upon to do the entire work" (Id., p. 212, near middle), while, on the contrary, in the American patent, the artificial digestion is relegated to a very inferior and manifestly unimportant office" (Id., 212), and its "action must be *exceedingly* small, both on account of the small quantity of the gastric juice employed *and its feeble character*" (Id., p. 237, Ans. 33)—"both on account of *the minute quantity* of such juice present and its small power of activity conse-

* NOTE. The complainant's theory that Mege contemplated raising the settling temperature to about 120° F., if assumed to be true, puts them in the following legal dilemma, viz: 1. He either knew or did not know that, in such case, the prior melting with gastric juice at 103° was unnecessary and useless: 2. If he did *not* know it, then it is not his discovery and the omission of the digestive melting step is not a part of his process nor a known equivalent thereof, and the defendant does not infringe: 3. If he *did* know it, and still declared the digestive step to be a part of his process, and made no reference to its omission in any case, then he must be assumed, as a matter of law, to have intentionally included it in his description as a necessary step, and, in *that* case, the defendant does not infringe.

quent upon its composition." (Id., p. 240, end of Ans. 35.) And the statement is made that the foreign patents use 30 per cent. of gastric juice (Id., p. 212), while the American patent only uses 2 per cent. (Id., bottom of p. 223.)

But a comparison of the American and Bavarian patents shows *that the American patent uses nearly double the quantity of pepsin directed to be used in the foreign patent*—the proportion being exactly as *five* to *three* (p. 241, cross question and answer 39), which figures Prof. Morton is obliged to admit are *correct "as figures."* And what does their expert, Prof. Morton, *then* do but declare *that the foreign gastric juice is fifteen times as potent as the American because the former is diluted with fifteen times as much water as the latter!* (Id., pp. 241, 242, Ans. 39.) The limit of absurdity would seem to be here reached!

The solution of the American patent contained five-thirds as much pepsin and one-fifteenth as much water as that of the Bavarian patent; in other words, the American patent solution was *twenty-five times as strong in pepsin as that of the Bavarian patent.** If Mege desired to decrease the energy and potency of the pepsin, why did he make his pepsin solution twenty-five times as strong as before? Can the complainant's experts explain this on their theory?

They may answer the question by asking us why he decreased the *water* in the American patent. We think we can give the reason, although they appear to have carefully avoided it. It is, in our judgment, as follows:

1. So far as digestion is concerned, the gastric juice acts only on the cell walls of the fat, and they constitute but a relatively small portion of the mass.

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* NOTE. Reducing the water to one-fifteenth would make the pepsin solution 15 times as strong in pepsin as before; then increasing the pepsin to five-thirds would render the actual strength of the pepsin twenty-five times that of the Bavarian mixture.

"The gastric juice has no action upon the pure fat, but only on the animal tissues *which constitute a relatively small portion of the entire mass.*"

(Morton, p. 241, Ans. 37).

2. The digestion is due to the pepsin and acid, not to the water. The latter merely acts as a *vehicle* to bring the active substances into contact with the fat cells, and to remove the digested product from the vicinity. The water operates as a solvent not in the sense that it solves the cells or tissues (for that work is performed by the pepsin and acid), but only in the sense that it holds the dissolved cell walls and tissues in solution—*carries* them while the remaining work of the pepsin and acids is going on.

3. Fats are very different from meats and other solid food. When fats are digested, the cell walls ("a small portion of the entire mass") are the only substances dissolved; the liquid oil contained in them, constituting by far the larger portion of the mass, escapes, and, being *a fine, thin liquid*, bears away the dissolved cell-sacks just as water would. *In digesting meats and other solids*, no liquid escapes to act as such carrier, *and hence liquid must be supplied.*

It is only necessary that the liquid should be a neutral liquid, incapable of acting upon the pepsin or acid and thus interfering with them; and oil possesses this quality just as water does. Gastric juice in solution in oil is just as completely "dilute gastric juice" as when in solution in water.

4. The digestive experiments mentioned in scientific books are experiments on solid foods, etc. In such experiments, a dilutant fluid was, of course, always necessary for any long continued work, and water was naturally employed for the purpose. Hence the books speak of "aqueous solutions."

5. Mege, in his earlier patents, followed the books (see Morton, p. 233, Ans. 27), and used water. Afterwards, he found that so much water was unnecessary in his process,

and he reduced the quantity. It may or may not have occurred to him that the liberated soft oil would perform the work of the water; but, whether he understood the reason or not, we know that he reduced the quantity of water and still expected perfect digestion to ensue; and, to render it certain that it *would* ensue under the altered conditions he nearly doubled the amount of pepsin. It is to be particularly noted that, in describing the action of this strong digestive mixture, in his American patent, he called it "CONCENTRATED Digestion" instead of using merely the term "Artificial Digestion" as employed in all his foreign patents—a change of phraseology which implies increased, rather than reduced, energy. And this digestion was "conducted at a temperature which (as is well known) is that of the greatest activity or efficiency for gastric juice." (Morton, lower half of p. 211.)

6. "A given amount of pepsin" is "able in this manner to convert any amount of such animal matter, *provided the products of the change are removed* and the supply of dilute acid maintained. For this action the temperature must be maintained within moderate limits, not going very much above 100° Fahrenheit nor as low as freezing. During this action the pepsin appears *neither to increase nor diminish in amount, nor to suffer any loss of power.*" (Morton, p. 113, near end of Ans. 24.)

The reason why a small amount of liquid is inconsistent with long continued digestion (of solid matters) is that the liquid becomes *saturated* with the products of digestion and, as it can no longer remove them, the pepsin ceases to act.

(Morton, last paragraph of Ans. 35, p. 240.)

7. That the digestion of the American patent produces exactly the same result as that of the foreign patents, appears conclusively on the complainant's own evidence, from a comparison of Prof. Morton's alleged two experiments, viz.: one in which he says he followed the foreign patents, and another in which he says he followed the American patent. In the former (pp. 213, 214), the gastric juice

"*entirely broke down and dissolved the tissues*" (p. 214), in the latter (Id. pp. 279, 280), "*the fat was thoroughly melted*" (p. 218, near middle.) The results of the two processes were identical, so far as the *melting* was concerned, although he says that *in neither of them* did he get a separation (*i. e.* limpidity or settling), until he raised the temperature to 120° F. in the latter experiment (Ans. 11, p. 219), and 128° F. in the former (p. 214.) He got the melting quicker by the American than the foreign process—probably due to the "Concentrated" digestion, or, in other words, the increased quantity of the pepsin.

The unavoidable conclusion is, we think, from these premises, that the oil, as it is liberated, becomes the vehicle for holding in solution the products of digestion. These products are trifling in volume as compared with the oil, as Prof. Morton testifies, and as any one who has ever compared the amount of "cracklings" with the amount of melted fat obtained by rendering leaf fat, can also testify, and there is no reason why the liberated oil should not act as a vehicle to prevent "saturation" as efficiently as water.

The result of the whole argument on this subject is, that Mege considered himself, in his American patent, as setting forth the substantial equivalent of the same step already contained in his foreign patents; and on this point, as on the crushing, we have the known opinion of Mege himself, who has stated under oath that all the processes were one and the same—the same invention patented to him in France in July, 1869.

In their arguments on Mege's artificial digestion (especially when comparing it with defendant's manufacture which

omits digestion) the complainants' experts are exceedingly fond of appealing to the doctrine of "known equivalents." In one breath, they tell us that artificial digestion of fats was never industrially practiced till Mege employed it in his foreign patents, (Morton, p. 125, Ans. 97; p. 232, Ans. 25); in the next, they assure us that, so far as artificial digestion is concerned, the finer comminution of the fats together with a slight increase of heat *were its "known equivalents."*

"As I understand it, *an increase of temperature was, in a general sense, the known equivalent for the action of gastric juice* in liberating the greasy matter of fats from its membranous envelopes."

(Morton, p. 144, Ans. 173.)

"I believe, however, that *prior to Mege* the actions of heat and gastric juice in liberating the greasy matter of fats from its enclosing cells, *were known*, and *known to be substantially equivalent* in the manner pointed out in my previous answer, and that consequently *when it was shown that the results set forth by Mege could be obtained by one of these agencies, it became manifest that they could be secured by the other, especially with the assistance of a very perfect comminution of the fat.*"

(Morton, Id., p. 144, Ans. 174.)

"I regard this *slight increase* of temperature as the *obvious*" (note the word, "obvious") "equivalent for the gastric juice which is omitted."

(Morton, Id., middle of p. 104, Ans. 21.)

"The employment of gastric juice, which was a *manifest*" (again note the word, "manifest") "equivalent for a more thorough comminution of the material, or perhaps for a *slight increase in temperature.*"

(Morton, Id., p. 126, Ans. 100.)

"An increase of temperature and also a more perfect comminution of the fats were *separately or together* equivalents for the use of gastric juice in the rendering of fats."

(Morton, Id., p. 144, beginning of Ans. 173.)

From these facts, testified to by the complainants' experts and made a part of their case, it follows as an irresistible legal conclusion that when Mege, *in his foreign patents,*

pointed out that "the results could be obtained by *one* of these agencies," (heat or gastric juice,) and it therefore became *manifest* that they could be secured by the other, "*especially with the assistance of a very perfect comminution*," the substitution of heat and the more perfect comminution became and was the substitution merely of a known equivalent *for Mege's foreign process of artificial digestion*, and, being a mere equivalent, was not thereafter independently patentable to Mege or anybody else as an improvement on his foreign process.

But now mark the self-stultifying character of this expert testimony. Having sworn that heat and gastric juice were known equivalents for the liberation of fat from its cell-sacks; that a *slight* increase of temperature was such known equivalent; that a *more perfect comminution* was also a known equivalent; and that a slight increase of temperature, gastric juice, and more perfect comminution, were not only *known* equivalents but "obvious" and "manifest" equivalents of each other for such purpose; Prof. Morton proceeds, in complete obliviousness of these facts, to testify as follows:

"C. Q. 175. Please state what was then known as to the effect produced by rendering fat at a comparatively low temperature, for example, at a temperature ranging from 120° to 130°?

"A. *Nothing whatever.*"

(Morton, p. 144; question and Ans. 175).

Now, which of these conflicting statements (of *fact*, be it remembered) was true? And what can the court believe, on such evidence?

But, assume either to be true, how can the defendant be held? If the use of gastric juice, a slight increase of temperature above 103° F., and more perfect comminution, *were* known "obvious" and "manifest" equivalents, *then they were covered as known equivalents by the foreign patents;* if they were *not* known equivalents—if the effect produced

by rendering at 120° or 130° F. was utterly unknown—then Mege's patents do not inform the world of such effect nor of such assumed equivalency, but leave it as ignorant as before, and, consequently, the defendant does not use a known equivalent and does not infringe. We care not which horn of this dilemma the complainants take, for the choice of either necessarily delivers the defendant.

But, as a matter of fact, the theory of known equivalency was undoubtedly true. As long ago as the year 1819, "Reese' Encyclopœdia," and, in 1829, the "London Cyclopœdia," (quoted on pp. 185, 186), stated the melting temperature of lard to be 97° F., and mutton fat 127° F., and gave directions for rendering them by cutting them into small pieces, "*then melting it by a moderate heat, and straining by pressing it through a linen cloth,*" and then continued as follows:

"The above mentioned processes are intended for purifying suet and lard; but, *in order to obtain them very pure*, they should be *washed in water* till the water comes off colorless, before they are melted. During the melting the remaining water is evaporated, and that this is the case may be ascertained by throwing a little of the melted fat into the fire when it will crackle if any water remains. *The heat must not be raised above 97°, the melting point of fat*, because *otherwise the fat is decomposed, rendered acrid, and assumes a yellow color.*"

Also in Lunel's Treatise, published in 1864, quoted on p. 123, as follows:

"*Mince up* twenty kilos of lard or marrow; *grind it in a mortar; wash it thoroughly* until the water ceases to be turbid; strain, and *melt it at a gentle heat*, adding to it sixty grammes of alum *and a handful of salt.*"

Here, in the Encyclopœdias, was a direction to melt at the melting point of fat, which, in the case of lard, was 97° F., and in the case of mutton suet, 127° F.; while, in Lunel, there was a direction to grind the fat in a mortar. In Ott's Treatise, published in 1867, and quoted on p. 135, it is stated that "The melting point of beef tallow, we found to be as

high as 111° Fahr.;" and Prof. Morton states, (p. 135, Ans. 138), "Mutton fat is the least fusible, or has the highest fusible point; beef fat comes next, and hog's fat is the most fusible, or has the lowest fusing point." What was known about the action of artificial gastric juice is set forth on pp. 108 to 114, 229, 237 to 241.

It was therefore known, prior to Mege, that fat could be rendered at its melting point—97° to 127° F.,—*without being decomposed or rendered acrid;* that it could also be melted by artificial gastric juice at from 100° to 103°; and that a "previous state of minute division" was necessary "in promoting the operation of the gastric solvent," (Carpenter's Physiology, quoted on p. 229), and grinding the fat in a mortar previous to rendering had been practiced in the arts (Lunel's Treatise). Prof. Morton takes it for granted that Mege "consulted authorities" in making his invention (Morton, p. 233, Ans. 27); and states further, that "*it was well known* that the effect of gastric juice was to secure *the same result that was aimed at by the crushing*, only in a more perfect manner."

(Morton, p. 126, Ans. 102).

It would seem, in view of these facts and admissions, that the equivalency of moderate heat, comminution, and gastric digestion, was very well known before Mege made his invention, and that Prof. Morton's statement that "nothing whatever" was known as to the effect of rendering at a temperature ranging from 120° to 130° F. must be credited to

> "The instinctive theorizing whence a fact
> Looks to the eye as the eye likes the look."

In view of the above facts, it is hardly necessary to call the attention of the court again to the prior Paraf patent, where the fat was not only hashed "in a regular meat-hasher," but melted and rendered "at a temperature varying

from 100° to 120° Fahrenheit, and stirring it constantly;" nor to refer again to Mege's affidavit that the foreign and American processes were one and the same identical invention.

Before we leave this subject of "Concentrated Digestion," let us stop for a moment to consider *what construction the complainants, in taking their expert evidence, put upon Mege's American patent, down to the end of this step.*

Referring to this third step, Prof. Morton* says:

"The essence or characteristic features of this third step, I regard to be, *not* the employment of gastric juice, which was a manifest equivalent for a more thorough comminution of the material, or perhaps for slight increase in temperature, *but the rendering or separating the greasy substance from the tissues at such a low temperature as should prevent it from acquiring any taste of fat.*"

(p. 126, Ans. 100.)

There is no mistaking the meaning of this language—it declares the digestion non-essential; and the degree of temperature non-essential, so long as it is too low to decompose and render acrid the fat; and places the whole invention, down to the crystallizing step, as consisting, broadly, in rendering the fat at such a low temperature as should prevent it from acquiring any taste of fat. It treats the entire invention here in issue as consisting of only two steps, viz: first, rendering at the low temperature, and, secondly, crystallizing and pressing out the stearine.

1. *If this is the invention of the American patent, then it is plainly anticipated by Paraf's patent of April 8, 1873.*

2. If this is the invention, then it is plainly anticipated by Mege's prior foreign patents.

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*NOTE. We cite from Prof. Morton's testimony in this matter, and generally throughout this brief, in preference to complainant's other experts, because he is their leading expert, and because their other experts agree with him on all points. (See Chandler, pp. 157, 158, Ans. 21; also stipulation in lieu of cross-examining Prof. Chittenden, pp. 297, 298.)

3. If this is the invention, then it is not set out in the patent in such full, clear and exact terms, "so as to distinguish it from other inventions" (Rev. Stat., Sec. 4888) as the law requires, and the patent is therefore void.

4. If this is the invention, *then it was properly described in the first and second reissues*, and not in the original patent and present reissue.

Nothing could demonstrate more clearly the utterly unreliable character of the complainant's expert testimony, than a consideration of Prof. Morton's Answers, 145, p. 137, and 31, 32, pp. 234, 235. After having sworn, half a dozen times over, that the treatment with gastric juice was a known, "obvious" and "manifest" equivalent for "a slight increase of temperature," and also for "a more thorough comminution of the material," he is asked, in substance, if the rendering at a low temperature, by heat alone, so as to secure a product devoid of disagreeable taste and odor, and a rendering by the aid of gastric juice to secure the same result, were "the same or different processes," and he answers (p. 137, Ans. 145), "*They are different processes.*"

And, afterwards, when confronted with the foreign patents, which melt by artificial digestion at 103° F., and asked *whether the omission of the gastric juice thereof and the substitution of a heat ranging from 120° F. to 130° F. would infringe the foreign patents*, he answers "*with hesitancy*" (p. 235, Ans. 31) that he thinks it would not be the same invention set forth and claimed, under a broad claim, in the foreign patents! (p. 235, Ans. 32.)

Yet he swears (p. 144, Ans. 174) that "when it was shown that the results set forth by Mege could be secured by *one* of these agencies" (slight increase of temperature, *or* artificial digestion) "*it became manifest that they could be secured*

by the other, especially with the assistance of a very perfect comminution of the fat;" and that, therefore, the defendant infringes.

That is to say: A certain fact, if known before the American patent, would cause the processes of digestion and rendering to become equivalents for the purposes of that patent; but, if known before the foreign patents, would not cause said processes to become equivalents for the purposes of those patents!

It will be borne in mind that the foreign patents were the original and first patents of Mege on his process, and were entitled to cover equivalents (see *O'Reilly* v. *Morse*, *Tilghman* v. *Proctor*, and other cases), while the American patent, *being a mere improvement patent on the complainant's theory*, was *not* entitled to cover equivalents; yet here is their expert swearing that the broad foreign patents for the original invention would *not* be entitled to cover the defendant's process as an equivalent, while the limited American patent for a mere improvement *would* be so entitled!

4th and 5th Steps: Crystallization, and Separation of the Stearine. These steps are set forth in the Austrian patent as follows:

"3. PRESSURE. This operation separates the hard constituent which makes the fat granular and causes it to congeal rapidly. This work, hitherto very difficult, is carried out *on a commercial scale* in the following manner: The *fluid clear fat* is poured into vessels with an opening at the bottom and containing a layer of tepid water. They are covered, and when the cooling *and the crystallization* have taken place, the water is drawn off through the opening, the vessel is inverted and the mass allowed to fall upon a table. It is cut into cakes one to two centimeters thick. These are put into canvas and pressed between two warm plates. *By this method there is obtained about 60 per cent. of a fatty body resembling butter and identical in composition with lard, but free from odor, and*

of a perfectly pure taste. The solid portion remains in the canvas." (p. 484.)

The English, French and Bavarian patents are substantially identical in their description of this step. "*There is no substantial difference between the English and the other foreign Mege patents.*" (Morton, p. 215, Ans. 5.) The Bavarian patent, however, states explicitly that the oil which runs off from the pressure *is a mixture of margarine and oleine*, "*of about the taste of fresh butter.* It melts in the mouth *and does not stick to the palate like beef-fat.* The solid residue taken out of the cloth *is good stearine*, fit for making candles immediately." The hard constituent (stearine) is the substance "which makes the fat granular, congeal rapidly, and *stick to the palate.*" (p. 490.)

1. Note, now, that the substance derived from the previous steps of the foreign patents and set away to crystallize, is "*fluid, clear fat;*" showing that not only perfect melting but *perfect separation* has been effected by the preceding steps.

2. That, in order to become crystallized, this "fluid, clear fat," is set in a vessel *which is covered up*, so that no chilling draughts of air can reach the fluid while crystallizing.

3. That it not only cools in these vessels, but *crystallizes.*

4. That, by the pressure, about 60 per cent. of oleomargarine oil and 40 per cent. of stearine are obtained.

5. That the pressure is effected in canvas between warm plates, by a press.

6. That no specific temperature is prescribed for this operation.

In the American patent, substantially the same process is followed, with these differences in detail:

1. The layer of tepid water in the vessel is omitted.

2. The fat is allowed to cool from 103° F. *to some degree not stated.* He *surrounds the vessel with* "*water* at the fixed temperature of 86° Fahrenheit for the soft fats proceeding from the slaughter-house, and 98° for the harder fats, such as mutton fat." *But this temperature of the water-bath would not be the temperature of the fat. Prof. Morton used a water-bath at 160° F. and only had the fat at 120° F.* (Morton, p. 219, Ans. 11.)

3. When the crystallization has so far been completed that the stearine is deposited in the form of teats at the middle of the oleomargaric liquid, he dumps the whole mixture into a "centrifugal" and, setting it in motion, exhausts the oil, leaving the stearine in the centrifugal, and thus separating the oleomargarine from the stearine "when it is cold and passed to the cylinder," *i. e.*, the centrifugal or "hydro-extractor."

Comparing the foreign and American patents, we see that this step, in both, consists of only two parts, viz: first, slowly cooling till proper crystallization is effected; secondly, separating the stearine from the oil by pressure.

In this, as in other matters, the complainant's experts have endeavored to totally misrepresent both the patents and the facts, and are, as usual, ready with a learned theory to back up their misrepresentations.

Their theory is that, as Mege, in his foreign patents, not only cooled the fats down till the crystallization of the stearine had been effected, but allowed the cooling to go on further till the whole mass was solid, and then cut it into slices and pressed it between warm plates, he must have relied upon the heat of the plates to get the oil out. Now, they say, if he *did* heat the plates sufficiently to extract the oil, they

would also melt the stearine, and the latter would run out with the oil, and hence the resultant liquid would not be good merchantable oleomargarine; and if he did *not* heat the plates sufficiently to melt the stearine, he would get so small a quantity of oleomargarine oil that the process would not be commercially and financially successful; and, *contradicting Mege's most positive and explicit declaration in his foreign patents*, they argue that he could not possibly obtain about 60 per cent. of good oleomargarine oil and 40 per cent. of stearine by such process.

(Morton, pp. 213, 221; Wheeler, Id., pp. 272, 273; Chittenden, Id., pp. 288–291.)

In support of this extraordinary contradiction of M. Mege, they cite certain experiments alleged to have been made by themselves to test the matter. (Morton, pp. 213, 214, 215, 218, 251, Ans. 60, 61; 252; 260 to 266; Wheeler, 277, 279; Chittenden, 283 to 294.) In these experiments, professedly made in accordance with the Mege foreign patents, (Morton, bottom of p. 213,) they crushed the fat, and melted it by artificial digestion between 100° F. and 103° F. (Id. p. 214.) They conducted the process, in some way, so as not to get the surface limpidity which Mege so particularly describes, but so as to get a complete breaking down and dissolution of the tissues, and "so that the fatty matter had melted together into a thin salve-like mass, but still retained enough of the watery fluid to form an emulsion very much like the salve called 'cold cream.'" (Id., p. 214.) They let it stand in this condition for a considerable time till "it began to have a disagreeable (though not a putrid) taste and smell" (Id., p. 214,) and then, failing to get the complete surface limpidity that Mege describes, and declares in all his patents must result from the process if properly carried out, they gave up the experiment in great triumph, and concluded to resort to the process of the American patent to secure the separation and limpidity; in pursuance of which

resolution they proceeded to do what Mege, in his American patent, does *not* direct them to do, *but what he does clearly and plainly tell them, in his English patent, to do*, viz: raise the temperature to the melting point and keep it there until the fat "is *absolutely* limpid!" They got a material of "gluey flavor," *because they let the fat, already improperly treated, stand too long before applying the third step of the English patent.* From their own description, there is no manner of doubt that if they had applied the settling process of the English patent at the proper time, they would have obtained not only the perfect limpidity which they did obtain, but also the sweet pure taste like butter, which Mege obtained but which they failed to obtain.

It is a curious fact, that, in all their examinations of these patents, and throughout all their testimony, they seem to have entirely overlooked the decisive declarations and directions contained in the English patent and undoubtedly considered by Mege to be implied in all his other foreign patents. (See Morton, Ans. 44, pp. 245, 246).

Having thus spoiled the product of this experiment by not carrying out the process of the foreign patents as therein directed, they concluded that it was not worth while to submit this product to pressure, and then they went to work and manufactured a product by substantially the defendants' process (pp. 216, 217), "seeded" or crystallized it; filled cans (marked "A" and "11") with it; submitted the contents of the can A to pressure in canvas cloths between iron plates at about 85° F., and obtained about 19½ per cent. of stearine and 80½ per cent. of oil (Id. p. 217); and submitted the contents of the can 11 to similar pressure at from 105° F. to 110° F. (Wheeler, p. 278, Ans. 26), and obtained about 5 3-10 per cent. of stearine and 94 7-10 per cent. of oil. (Id. p. 278).

In both experiments, the oil obtained from the pressure was

"*thick and viscid, very sticky on the tongue and roof of the mouth, and felt granular or semi-crystalline.* In addition to this it solidified at a much higher temperature than did the oil obtained under the American patent," (Wheeler, end of Ans. 26, p. 278), *which properties showed that it was not the product of Mege's foreign patent process.*

"C. Q. 84. If the product of your experiment contains so much stearine that it adhered to the palate, and did not melt in the mouth like butter, it was not a product possessing the qualities set forth by Mege as characteristic of the product of his process in the foreign patent, with its qualities of non-adherence to the palate and melting in the mouth like butter, was it?

"A. As far as those properties were concerned, under the assumption of your question, *it would not be the product so described.*"

(Morton, p. 263).

They had thus obtained a product which was admittedly not the Mege product, but which was exactly adapted to their purpose of muddling and misleading the court; and they proceed to argue that, as the plates when heated to about 85° F. yielded 19½ per cent. of stearine, but, when heated to from 105° F. to 110° F., yielded only 5 3-10th per cent. of stearine, therefore the stearine must have been melted out by the heat. Hence, if hot plates were used, too much stearine would be carried into the oleomargarine oil; and, if cold plates were used, it was *assumed* that too little of the *oleine* and *margarine* would be obtained.

In answer to these experiments and the argument based upon them, the defendant, on June 17, 1885, pressed some crystallized "stock" (fat melted at a moderate heat, separated from tissue, seeded or crystallized, and chilled so as to have become a solid block) between plates at about 100° F., *and obtained between 60 and 61 per cent. of good merchantable oleomargarine oil from the process, just as declared by Mege, and corroborating him perfectly* (pp. 408 to 454, testimony of G. Fitmaurice, Peck, J. H. Fitmaurice,

Whalen and Hartog). Whereupon, it became evident at once that our fine scientific experts, Morton, Wheeler and Chittenden, had, either intentionally or unintentionally, conducted their process *so as to avoid the correct result.*

To meet this, the complainants then went to work and had an experiment made at Chicago (pp. 302 to 328), another at New Haven, Conn., (Id. pp. 328 to 354), and a third at Brighton, Mass., (Id. pp. 355 to 363), in a futile effort to confirm their scientists and especially their theory. Two things resulted from these experiments, viz.: first, *they demonstrated how easy it is to spoil the result if the experimenter desires that issue;* and, secondly, that the experimenters *did desire that issue.*

In the Chicago experiment: they left the windows open near the seeders (crystallizing tubs) during the seeding (crystallizing)—(see Ans. 31 to 61, pp. 307 to 310)—and only two feet from the seeder (Id. p. 309, Ans. 54), and let the wind blow in on the melted crystallizing stock, the seeders being uncovered (Id. p. 315, Ans. 139), *and thus produced no crystallization whatever.* (Id. p 315, Ans. 143; 316, Ans. 150; p. 324, Ans. 19). And, *because the stock was not crystallized they knew, when they afterwards chilled and pressed it, that they could get no reliable result from such an operation, and that it was a mere farce.* (Davis, p. 324, Ans. 20 to 23.) That drafts of air or any sudden and abrupt surface chilling, prevent crystallization by causing a hard incrustation to form on the surface of the oil, is proved by the testimony of complainants' witness, Easterbrook, (p. 342, Ans. 94, 96).

In the New Haven experiment: the process was *so conducted as again to prevent seeding,* (p. 335, Ans. 36, 37), and the experimenter knew, when he put the chilled stock into the press, that it had been so "improperly treated" (Id. pp.

335, 336, Ans. 40) that it would not result in a pure oleo-margarine oil. (Id. p. 336, Ans. 41). This incrustation commenced about 8 o'clock p. m., when Easterbrook left the factory and Sykes took his place (Id., pp. 351, 352, Ans. 30 to 36; p. 335, Ans. 36). *At that hour there was a sudden and abrupt chilling of the stock.* From 1 o'clock p. m, to 8 o'clock p. m. the temperature of the room had been at or above 86° F. (p. 331). *Easterbrook* says (same answer) that it was as high as 86° F. when he left. *Sykes* says (p. 352, Ans. 37) that the temperature of the room was 83° F. or 84° F. when Easterbrook left. The stock was drawn into the seeder at a temperature of 87° F. at 1:10 p. m. (p. 353, Ans. 40, and see Sykes Ans. 10, pp. 348, 349, giving substance of memorandum there referred to). After standing in that room about seven hours, it had, according to Sykes, fallen, at 8 p. m. to only about 84°, while, according to Easterbrook, it had fallen only one degree. *Two hours later—at 10 p. m.—it had fallen to 80° F.* In other words, the temperature of the stock *fell, in those two hours at least about twice as much as in the whole preceding seven hours!* Note, also, from the memorandum, that this whole fall may have occurred within half an hour after 8 p. m., for the temperature was not noted till 10 p. m.—At 10 p. m. it was 80° F.; *non constat* that it was not 80° F. as early as 8:30 p. m., so far as the memorandum or Syke's testimony show.

Now, that the incrustation and consequent prevention from crystallizing occurred as the result of this sudden chill, is admitted in plain terms by Easterbrook, who says (p. 342, Ans. 92):

"When the temperature of the room had been reduced at a later hour to 80°, the chilling process *went on with a rapidity sufficient to abnormally harden or produce incrustation*, preventing the escape of the heat further down in the box, and in my opinion prevented the proper seeding of the stock immediately under this incrustation."

Here, then, as in the futile Chicago experiment, the

process was so conducted as to absolutely prevent the crystallization which Mege directs in *all* his patents, and, consequently, the pressing operation was a mere farce.

In the *Chicago* experiment, they pressed two lots of this spoiled stock. The first lot, pressed between plates heated to 100° F., gave 31¾ lbs. of oil, and 53¾ lbs. stearine—too small a proportion of oil to be commercially practicable. (p. 304, Ans. 9.) The second lot, pressed between plates heated to 120° F., gave 44 lbs. of oil and 45½ lbs. of stearine —also too small a proportion of oil (Id., p. 305, Ans. 14).

In the *New Haven* experiment, they also pressed two lots of the spoiled stock. The first lot, pressed between plates heated to 120° F., gave 21 lbs. of oil and 55½ lbs. of stearine. (p. 332, near top.) The second lot, pressed between plates at 100° F., gave 23 lbs. of oil and 61 lbs. of stearine. (p. 332, end of Ans. 12.)

To see how worthless are both of these experiments, just compare the percentages of oil obtained from them! The stock itself is manifestly assumed by the complainants to have been substantially alike in both cases. Yet, when pressed between plates at 100° F., it gave, *at Chicago*, about 37 per cent of oil, and, *at New Haven*, only about 27 per cent.; and, when pressed between plates at 120° F., it gave, *at Chicago*, about 50 per cent. oil, while *at New Haven*, it gave only about 27 per cent!

And *these* are results which they ask the Court to accept as evidence! *

In Profs. Morton, Wheeler and Chittenden's prior experiment at Brighton in 1884 (already above referred to), pres-

* NOTE. The stocks *were* undoubtedly alike –the differences in yield came, as we shall hereafter see, from *pressing differently*. For it is true that, with precisely the same stock, it may be *so pressed* as to produce entirely different yields and, consequently, greatly different qualities of product.

sure with plates heated to 85° F. gave 80½ per cent. of oil, and with plates heated to from 105° F. to 110° F. it gave 94 7-10 per cent. of oil! *It is evident that they can conduct the pressing operation so as to get almost any percentage of oil that they please; provided they conduct it as Mege did not intend it to be conducted, and as skilled workmen would not conduct it.*

At about the same time when the complainants made the Chicago and New Haven experiments with the spoiled stock, they also made another Brighton experiment, which was made and testified to by Reed. (pp. 355 to 363.)

In this experiment the stock was properly seeded or crystallized. Two lots were pressed—one between plates heated to 90° and 95° (average, 92½° F.), the other between plates heated to 105° and 110° (average, 107½° F.) (See pp. 356, 357, and Mr. Offield's admission immediately after Cross-Question 29, p. 360.) With the plates averaging 92½° F., Mr. Reed got 80 per cent. of oil, and with the plates averaging 107½° F., he got 94 per cent. of oil. (Id., pp. 356, 357.)

They now considered that they had demonstrated their theory, viz: that, with chilled and solidified stock, plates not heated would give too little percentage of oil for commercial profit, and plates heated would give too much for practical use in butter-making;—and that heat, sufficient to release the oil, would also release stearine.

But let us compare their results and see about this.

With plates at 85° F., Morton, Chittenden and Wheeler, in the Brighton experiment of 1884, got 80½ per cent. of oil, and Reed, in the Brighton experiment of 1885, got 80 per cent. But, *with plates 15° warmer (100° F.)*, the Chicago experiment gave only 37 per cent. of oil, and the New Haven experiment only 27 per cent.!

Again, in the Professors' Brighton experiment in 1884, with plates at from 105° to 110° F. (average, 107½° F.), they got 97 7–10 per cent. of oil, and Reed, in the Brighton experiment of 1885, got 94 per cent. But, *with plates 12½° warmer (120° F.)*, the Chicago experiment yielded only 50 per cent., and the New Haven experiment only 27 per cent.!

Again, the New Haven experiment gave 27 per cent. of oil *both when the plates were at 92½ and when they were at 107½!*

These results are very far from demonstrating their theory—on the contrary, they demonstrate that there is nothing in it.

The defendant, satisfied that, with properly seeded or crystallized stock, the differences in the yield of oil expressed from chilled and solidified blocks of stocks *were to be accounted for substantially by differences in the mode of pressing and not by differences in the temperature of the plates*, went to work after the complainants had put the Chicago, New Haven and last Brighton experiments in evidence, and *made four experiments at its works to test the correctness of this belief, and demonstrated it to be true beyond all manner of doubt.* (See pp. 491 to 498.) These four experiments are, in the evidence, called experiments No. 3, No. 4, No. 5 and No. 6. (Question 4, p 492.)

In No. 3: plates, 80° F; oil, 55 5–9 per cent. (p. 492.)

In No. 4: plates, 92° F.; oil, part of it, *spoiled.* (p. 493.)

In No. 5: plates, 110° F.; oil, 60 per cent. (p. 494.)

In No. 6: plates, 136° F.; oil, 63 per cent. (p. 494.)

In Nos. 3, 5 and 6, with plates at 80° F., 92° F., and 136° F., respectively, the oil obtained was 55 5-9, 60, and 63 per cent.—substantially Mege's percentage as declared in all his foreign patents. *This oil was good commercial oleomarga-*

rine oil. (Ans. 4, 12, 14, 15, 16, 17, pp. 492 to 494.) *The same press was used in all four experiments* (Id., p. 465, Ans. 20), and it was *run at the same speed*, the only difference being that, in No. 3, No. 5 and No. 6, it was stopped occasionally to allow the oil to exude properly from between the plates, *while in No. 4* (which partially spoiled the product), *it was run continuously without stopping.* (Id., p. 496, Ans. 22.)

In No. 4, the oil *at first came off clear and of good quality* (showing that the temperature of the plates, 92° F., did not affect it), but afterwards (*when the plates must necessarily have become cooler*) the oil began to come off pasty and sticky, indicating too much stearine. (Id., p. 493, Ans. 9, 10, 11, 12.) About 36 per cent. of the good oil was obtained before the oil began to come off pasty and sticky; and about 27 per cent. of the pasty oil was obtained (total, 63 per cent.) before the belt slipped off and the press stopped. (Id., p. 493, Ans. 9.)

Nothing could demonstrate more conclusively than these four experiments, that the difference both in yield and quality of the product depends substantially upon the care taken with the pressing, and not upon the temperature of the plates (at all events, not with a temperature ranging anywhere between 80° F. and 136° F.) The changes of temperature of the plates, *ranging through fifty-six degrees Fahrenheit* (from 80° to 136°) produced no material effect upon the product; the change in the mode of pressing produced an immediate and decisive effect upon it.

The results of experiments No. 3, No. 5 and No. 6, were the same as in the defendant's experiment of June, 1885, (pp. 408 to 454, and see Ans. 12 to 16, p. 420), where the oil obtained was between 60 and 61 per cent. and of excellent quality.

The whole evidence shows that Mege's foreign patent process of chilling the crystallized sock, slicing it, and

pressing between warm plates, can be successfully carried out with precisely the results stated by him, *if one desires success*, and can be made to fail, *if one desires failure.* And it demonstrates conclusively the worthlessness and unreliability of the complainants' expert's testimony and of their "scientific" theories. And it further proves the complete equivalency of the American and foreign patents, so far as concerns the separation of the stearine from the crystallized stock.

The crystallization ("seeding") *of the stock before pressing*, is explicitly directed by Mege in all his foreign patents, *and no particular limit of temperature or time is specified for the purpose.* The "clear, fluid fat," is to be poured into vessels having a layer of tepid* water on the bottom, which vessels are to be covered,—

"And when by reason of the cooling *the crystallization is completed*," etc., etc.

French Patent, Paragraph 3, p. 476.

"When by the cooling *the crystallization* is effected," etc.

Eng. Prov. Specification, Paragraph 3, p. 479.
Eng. Patent Paragraph 4, p. 482.

"When the cooling and *the crystallization* have taken place," etc.

Austrian Patent, Paragraph 3, p. 484.

"When *crystallization* has occurred in consequence of cooling," etc.

Bavarian Patent, Paragraph 3, pp. 489, 490.

In Profs. Morton, Wheeler and Chittenden's Brighton experiment, they found that perfect crystallization took place.

"As a matter of fact, when the contents of these cans were examined on the morning after they had stood there over night, *it was found that the crystallization had taken place in a very thorough manner, so that the*

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*NOTE. "The reason of using the *tepid* water in this layer in place of *cold* water, is manifestly not to cool the fat, but to prevent it from *chilling suddenly* where in contact with the water." (Morton, middle of p. 261.)

stearine was all crystallized out throughout the mass in granules, leaving a fluid oil."

(Morton, p. 252, near bottom.)

"The directions of the foreign patents, as I have repeatedly pointed out, are to allow the rendered fat to cool and *crystallize*, until it becomes solid. This I did in every case completely, and *know that the crystallization of the stearine was complete at one time* and *at a later time* the crystallization and solidification of the remaining substances were also complete, so that the mass, when finished, was sufficiently solid to be cut into slices or blocks as the patent directed."

(Morton, p. 261, middle of page.)

The complainant's Chicago and New Haven experiments, where the stock was suddenly chilled so that no crystallization occurred, and was then solidified and pressed, may, therefore, be left out of further consideration because they were manifestly no tests of the Mege foreign process.

But, some of the complainants' witnesses attribute the absence of crystallization in the Chicago and New Haven experiments, to their attempt to "seed" or crystallize *at the same temperature at which the defendant had seeded his stock for the experiment of June 17, 1885;* and this argument will undoubtedly be made by complainants' counsel at the hearing.

Let us therefore, now, consider this question.

Mr. Peck, who was present in the seeding room once or twice each hour during the day, while the defendant's stock was seeding, (p. 432, Ans. 89), tested the temperature of the room several times, and found that it stood at "80° F.—or about 80° or 81°." (Id., p. 432, Ans. 88).

The seeder (tub) in which this stock was seeded, *was situated in the same room where the defendant, in the ordinary course of its business, seeds all its oleomargarine stock, and at the same temperature.* (Peck, p. 432, Ans. 86, 87; p. 433, Ans. 93; p. 418, Ans. 4; p. 421, Ans. 26, 27; G. Fitzmaurice, p. 412, Ans. 58 to 67; J. H. Fitzmaurice, pp. 444, 445, Ans. 71 to 89; Whalen, p. 449, Ans. 51 to 54). George

Fitzmaurice did not know the temperature of the room (p. 412, Ans. 60 to 63). John H. Fitzmaurice testified that the room is kept at "between 80° and 85°." (p. 440, Ans. 23).

Assuming, on this evidence, that the temperature of the room was 80°, the complainants, in their Chicago and New Haven experiments, tried to keep their experimental seeding room at 80°, and charged that the failure of the seeding was due to the low temperature of the room—*Ergo*, that the experiment could not be carried out as defendant's witnesses had stated they had carried it out.

The following considerations, however, answer this argument completely:

1. The complainants, in their Chicago and New Haven experiments, suddenly chilled the surface of the melted stock in their seeders, and this, of itself, as we have seen, furnishes a full explanation of their failure and the defendant's success.

2. The defendant seeded its experimental stock in the same room where it habitually seeded all its other stock, and under exactly the same conditions. *It was a seeding temperature, whatever was the degree.* Mr. Peck may or may not have been mistaken as to the exact degree—he made no memorandum of it, but relied upon memory alone. Whether he was or was not in error is entirely immaterial, so long as the stock was seeded just as all the other stock of the defendant is seeded; and that it seeded perfectly, as Mege directs in his foreign patents, wherein he fixes no limit of seeding temperature.

3. Mr. Fitzmaurice (p. 440, Ans. 23) thinks that the temperature of the room is kept at "between 80° and 85°." Reed, one of complainant's witnesses, testifies (p. 361, Ans. 44) that 85° or 86° is "the usual temperature for seeding" in his establishment. *The complainants' witness, Conally,*

(p. 40, Ans. 17), who formerly worked for defendant, testified that defendant seeds its stock at 80° F. *The complainants' witness, Manley*, testified that a concern for which he formerly worked seeded at from 70° to 80° F. (see his Ans. 33 and 39, p. 55). The complainants' expert, Mott, also fixes 80° F. as the temperature for the separation of the stearine. (p. 179, just below middle).

4. In the experiments afterwards made at defendant's works (experiments No. 3, No. 4, No. 5 and No. 6, in October, 1885,) the temperature of the seeding room (the same room as before) was carefully noted and found to range from 80° to 84°, only once going as high as 84° (p. 493, Ans. 5). Yet the seeding goes on perfectly well in this room. The temperature used by several of the complainant's witnesses (Rockwell, 90°, p. 307, Ans. 30; Davis, 86° to 92°, p. 326, Ans. 31; Easterbrook, 86° to 88°, p. 333, Ans. 23) is, therefore, totally unnecessary.

5. Paraf, who was an able chemist (p. 170, Ans. 8), who made thorough experiments on this subject (pp. 170 to 173, Ans. 13 to 27), *and who obtained "a very fair imitation of butter,"* (Chandler p. 180, Ans. 56), stated in his patent of April 8, 1873, that "*a temperature of 50° to 60° Fahrenheit, which is the melting-point of oleomargarine, but which has no effect on the stearine or membrane*," is all the heat necessary for this part of the operation. Having made this statement, he proceeds as follows:

"Therefore, *at this temperature* and by the means of either of the above-named mechanical separations" [i. e. pressure in bags in a press, or, without bags, in a centrifugal] "the *melted oleomargarine* is separated from the *solid stearine* and membrane, and, after being congealed," etc., etc.

6. *The scientific books give a temperature from 70° to 80° F. as the proper temperature for crystallizing stearine out of melted fat.* (See Extract from Morfit's Chemistry, 1856, p. 124, and see, also, extract from the same work, p.

124, near bottom, which states the use of *centrifugal* for the purpose of such separation, as a known equivalent for the pressure in canvas bags described in the first of said extracts).

That the defendant's experiments were conducted correctly and obtained a perfect seeding, or crystallization of the stearine, at somewhere about 80° F., is thus completely established by the evidence; and the same proof also demonstrates that the complainant's failure to secure crystallization in their Chicago and New Haven experiments, resulted *not* from trying to seed at 80° F., but from the sudden chilling of the stock as we have hereinabove shown.

The proof, in its entirety, thus demonstrates conclusively that Mege made no wild guess in his foreign patents, when he stated that the process of crystallizing and solidifying the stock and then pressing it in canvas bags between warm plates gives about 60 per cent. of clear, good oleomargarine oil, but *knew exactly what he was talking about.*

And it demonstrates another thing, viz: that this 60 per cent. of good oleomargarine oil, thus obtained by the foreign patent process, *is exactly the same oil obtained by the process of his American patent*—which oil, the complainants' experts testify, can only be obtained by following the latter process "*or its substantial equivalent*"—and, hence, that the foreign process and the American process are, in substance, *one and the same process*, as Mege himself testified in his Patent Office affidavit.

Summary on this Point.

Thus, the following facts are clearly established, not only by Mege's affidavit of December, 1873, but by the weight of the evidence which fully corroborates his sworn statement, viz:

1. Mege, in all his patents, aimed to produce an artificial

butter which should be the full equivalent of natural dairy butter.

2. As a preliminary to the production of this butter, he, in all his patents, first produced from animal fats, a clear, liquid, sweet, oleomargarine oil free from any excess of stearine, having no disagreeable flavor, but having the taste and smell of melted dairy butter.

3. In all his patents, he directed the production of this oil by melting the fat *at a low temperature for the expressed purpose of avoiding any alterations or decompositions by heat.*

4. He knew, from the beginning, that, in order to obviate any tainting of the fat before its use in the process, the blood and other putrefactive matters of the fat should be prevented from fermenting—hence, in his foreign patents, he directed that such matters should be washed out, and, in his American patent, he directed that salts should be used to kill the ferments. Both means are admittedly equivalents.

5. The books told him the melting temperatures of the different kinds of fat, and also the crystallizing temperatures of their constituent elements, oleine, margarine and stearine.

6. He found no butyric taste in the cow's fats, but found it in the milk and butter produced by the cow. Some of the books told him that, "*being further changed* IN THE INTESTINAL CANAL, FAT *is rendered capable of* ABSORPTION BY THE LACTEALS," (see extracts from Kirk's Handbook of Physiology, just before Q. 20, top of p. 112.) Hence, he concluded that such change was a *digestive* change, and that the butyric flavor was produced thereby. He therefore determined upon a digestive melting, in order to secure the butter taste. He found experimentally that the flavor *was* changed by digestion, just as he had anticipated; and he found, further, that, by treating the pure melted oleomargarine oil with hydrochloric acid (one of the acid constituents of gastric juice), although the acid had no other perceptible effect upon the

oil except to decolorize it, and, although the books said it had no effect whatever upon fats, yet it had the effect to intensify the taste even so as to suggest the flavor of almonds. He was, therefore, thoroughly convinced that the butter-flavor was the work of gastric juice, and to secure that effect he adopted the digestive melting as a constituent element of his process in all his patents.

7. The books told him (and reason would have told him if the books had not) that thorough comminution was necessary to the proper action of gastric juice, as well as to rapid melting by any means whatever. Hence, in all his patents, he directed the comminution of the fat previous to its melting. And he undoubtedly regarded any alleged difference in the degree of comminution as a mere difference of degree and not of principle.

8. The books told him that the gastric juice acts best at the animal temperature, and that the bovine temperature is about 103° F. They also told him that gastric juice is *decomposed* and rendered forever useless by a temperature but slightly exceeding 103° F., and that its action is *temporarily suspended* by any temperature considerably lower than 103° F. Hence, in all his patents, he directed the melting temperature to be 103° F.

9. Having provided for the melting, he then directed the settling or removal of the tissue. In his English patent he directed this settling as a separate step, in a separate vessel, and at the melting temperature; which temperature is in the case of beef fats, from 111° F. to 116.6° F. (Q. 137, pp. 134, 135, Extracts from Watt's Dictionary and Ott's Art of Manufacturing Soap and Candles; 117° F., according to complainants' witnesses, Conolly, p. 45, Ans. 68; Leo, p. 69, Ans. 14; and Manley, p. 58, Ans. 81.) The gastric juice having accomplished its object before the settling, there was no longer any necessity for keeping the temperature at 103°

F. during the settling, and hence in that step he raised the temperature to the melting point of the fat. The result was that the settling rendered the whole body of the fat "*absolutely limpid.*" He did not clearly describe this settling step in his American or other foreign patents, but did, in all of them alike, declare that the process produced a clear, liquid, sweet, soft oil, having the butter-taste; so that if the higher settling temperature must be assumed in any one of these patents as necessary to produce that result, it must be assumed in all.

10. Having thus produced his "absolutely limpid" oil, he next provided, in all his patents, for the removal of the excess of stearine, in order to render the chemical composition of the product as nearly identical as possible with that of butter.

In all his patents, he directed that this result be effected by first crystallizing the oil by slow uniform cooling, and, secondly, when crystallized, removing the stearine by pressure. He found, in the books, that pressure in canvas bags was one way of doing this, and pressure in a centrifugal or "hydro-extractor" was another way (see p. 124, Extracts from Morfit's Chemistry). Hence, he directed the former in his foreign patents, and the latter (which is now never used) in his American patent—treating them as manifest equivalents.

He directed, in his foreign patents, that the oil, after cooling and crystallizing, should continue to be cooled till solid, and then be cut into slices and pressed in the canvas bags—probably thinking it more convenient to handle the oil in solid slices than in a mushy condition—but this further cooling and chilling was shown by subsequent experience to be unnecessary and was simply disused.

11. In all his patents, he not only aimed at but secured precisely the same resulting product—a product declared

expressly to be pure, sweet oleomargarine oil, free from excess of stearine, having a butter flavor, and suitable for producing, by subsequent steps of an equivalent character, an excellent artificial butter.

12. And when taking out his latest patent, he declared under oath that the American process and product are the same as that of the foreign patents. This statement was repeated under oath by the complainants' assignor, in its bill in equity against Mr. Fairbank, in August, 1876, and was also repeated by its expert chemist, Prof. Mott, in his "Report" in November, 1876. The defendants' position on this subject is an old position—the original position of the patentee and all the owners and experts of the invention;—the complainants' position is a new theory, ingeniously manufactured for the purposes of this case, and disproved by their own evidence.

SECOND DEFENSE: THAT, IF NOT EXPIRED, THE PRESENT REISSUE IS OTHERWISE INVALID.

The granting and reissuing of patents are matters resting entirely upon the express terms of the statute—therefore, whatever validity such patents or reissues have must be derived only from a substantial and actual compliance with the provisions of the statute.

Not every fault can be corrected by reissue; but only faults of the specification or claim, or both.

Not every fault of the specification or claim can be corrected by reissue; but only such faults as render the patent "inoperative or invalid."

Not every fault of the specification or claim which renders the patent "inoperative or invalid" can be corrected by reissue; but only such as have "arisen by inadvertence,

accident, or mistake, and without any fraudulent or deceptive invention."

(Rev. St., Sec. 4916).

The reissue can only be for the same invention patented in the original. The action of the Commissioner of Patents is not conclusive of the question of identity of invention, nor the question of "inadvertence, accident, or mistake," but the courts will examine and compare the original and reissue and decide these questions for themselves.

(*Miller* v. *Bridgport Brass Co.*, 104 U. S., 350, and other subsequent cases).

Cases have arisen where reissue claims, held to be in substance the same as original claims, have been sustained; but the case now before the court is believed to present a new question never before adjudicated, viz.: whether, when a process patent has been reissued upon a new and enormously expanded specification and claims and *without any of the original claims*, and has been held over the heads of the public, in that form for eight years, it is competent for the owners of the patent then to reissue again and go back to the identical specification and claims theretofore surrendered as so "defective or insufficient," by "inadvertence, accident or mistake," as to have rendered the whole patent "inoperative or invalid."

There is here no question of the original patent having been valid and operative *as to part*, and invalid or inoperative *as to the residue*. It described and claimed only one thing. *The entire description was changed* by the first and second reissues *and a new description and claims substituted.* (pp. 466, to 472, first and second reissue specifications and claims). The *whole invention* was bandied back and forth by the patentees, and finally (after *Miller* v. *The Bridg-*

port Brass Co.) returned to its original form by a third reissue.

Was the original patent "invalid or inoperative?" Was its specification "defective or insufficient?" Did the inventor claim "as his own invention or discovery more than he had a right to claim as new?" Was there any "inadvertence, accident or mistake" about it? If yea, then the same fatal defects inhere in the present reissue; if nay, then there never was any authority to reissue at all.

The complainants are privies in estate with all the former owners of the patent, and therefore bound by all estoppels existing against them.

The former owners surrendered and reissued with enormously expanded claims upon the express ground that the original specification was fatally defective or insufficient.

They repudiated the original specification and claims as invalid, and *on that ground*, obtained and used against the public for eight years the great advantages of an expanded description and claims, and only relinquished them when compelled to by a decision of the Supreme Court; are they not, as against the injured and defrauded public, estopped now to recall the repudiated document, set it up as the basis of new rights, and deny that the statements were true upon which they surrendered it and obtained such advantages? If there is any such thing as estoppel by conduct, it would seem to apply here.

But, in the very act of setting up this specification and claim, they repeat in their Bill the same allegation that it is so defective and insufficient as to render a patent granted upon it invalid or inoperative.

"And your orators further show unto your Honors that afterwards, and before the term for which said Letters Patent No. 146,012 were

granted had expired, the said Letters Patent *being inoperative or invalid by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new*, and the said error having arisen," &c., &c. (p. 3.)

Thus, both by conduct and pleading, the complainants would seem to be estopped to deny the legal insufficiency of this specification and claim.

Again: the courts, since *Miller* v. *The Bridgeport Brass Co.*, examine for themselves the question of the applicant's good faith in surrendering a patent and applying for a reissue on the ground of inadvertence, accident or mistake, and decide that question upon a mere inspection of the documents.

"Of course, if by actual inadvertence, accident or mistake, innocently committed, the claim does not fully assert or define the patentee's right in the invention specified in the patent, a speedy application for its correction, before adverse rights have accrued, may be granted, as we have explained in the recent case of *Miller, et. al.* v. *The Bridgeport Brass Co.*; but *where it is apparent on the face of the patent* or by contemporary records *that no such inadvertence, accident or mistake as claimed in a reissue of it could have occurred*, an expansion of the claim cannot be allowed or sustained."

James v. *Campbell, et al.*, 104 U. S., 356.

The matter of making such examination and decision devolves upon the court in this case. And can there be any doubt that this whole reissue business, from beginning to end, has been tainted with deliberate fraud and misrepresentation? Mege was probably an innocent party to the fraud —a foreigner, unacquainted with our language or our laws, he undoubtedly signed whatever documents were sent to him to sign. But the owners of the patent, who contrived and for eight years profited by the fraud, were not innocent. They come to the court with unclean hands, and have no cause for complaint if it should now refuse to hear them.

Again: look at the inconsistent positions occupied by

the owners of these patents at different times, and even at the same time.

First. They procure the original patent on the sworn declaration that it is for identically the same invention as the foreign patents; now, they say it is *not* for that invention at all.

Second. They take the original patent, six months after Paraf's patent, and with a claim so limited as to avoid covering Paraf (see *ante*, pp.) then they turn around and reissue with specification and claims so broad as to cover Paraf, and hold these claims for eight years.

Third. Having reissued with broad description and claims, covering the melting at 125° F., they allege, in their suit against Mr. Fairbank (p. 390, near bottom) that *even this* is the same invention patented in England and France in 1869; *now*, they are fighting with might and main to prove that sworn statement a lie.

Fourth. Abandoning the description and claims of the first and second reissues as being too broad to hold good in a reissue, they, in the same breath, ask the court to decree that the defendant's process (corresponding to the expanded description of the first and second reissues and not to that of the original) is an infringement of the original. In other words, the defendant's process is so widely different from the original as to render a reissue, describing it, invalid, but so absolutely the equivalent of the same original as to be included in its claims. This is the limit of absurdity.

Fifth. Swearing, in their Bill in this case, that a specification and claim which is a verbatim copy of their present patent is too defective and insufficient to be valid or operative, they, in the same Bill, rely upon the same specification and claim as entirely good and valid.

Has there been *any* good faith on the part of the complainants, in the course of this whole business? Have they

ever, at any time, been honest to the public or the courts? Are they any more honest now than heretofore? What *can* the court believe on their representation?

And *these* are the parties who now ask the court, by a strained interpretation of several portions of the American patent, and by supplying its alleged omissions, to read *into* it everything necessary to support their present theory, and, by disregarding its plain provisions, to read *out of* it everything which militates against their theory. In view of their past history, are they entitled to any such extraordinary straining of the judicial powers in their behalf? How long will it be before they are again occupying a position entirely inconsistent with their present one?

As now construed by the complainants, the American patent would clearly be void for uncertainty and ambiguity, and as not complying with the express requirements of the statute, Sections 4888, 4922.

Prof. Morton says (middle of p. 126) that the "essence or characteristic features" of the third step (concentrated *Digestion*) is not digestion at all, "*but the rendering or separating the greasy substance from the tissues at such a low temperature as should prevent it from acquiring any taste of fat.*" They ask the court to entirely ignore the gastric juice, and hold the defendant for infringing by not using it; to disregard the declared limitation of 103° F.; to disregard the plainly declared butter-taste and smell of the Mege product; to let them raise the settling temperature a great many degrees above what the patent states, and then, because they have raised the *settling* temperature, *strike out the previous step of melting at 103° F.*

Where is all this described in the patent so that any skilled mechanic could "make, construct, compound and use the same?"

Again: in the state of the art, *there existed the prior Paraf*

patent; where does Mege's patent, as they now construe it to cover melting at a low temperature without gastric juice, point out the principle and the best mode of applying it, "*so as to distinguish it from other inventions,*" to wit, *the Paraf invention?*

They claim the *product* as a new product. Wherein is it distinguished, in the patent, from Paraf's prior product; or from the prior foreign product of Mege, declared by him to be the same thing, and describable in the exact terms used by the American patent? If there are no differences, then the American product is anticipated, and, as the product admittedly can be made only by the patented process or its substantial equivalents, the process is also anticipated. If there *is* a difference, then the American patent must point out the differences in "full, clear, concise and exact terms," or be held void. Where are they pointed out in the patent?

Professor Morton himself was formerly a witness for defendants in the complainants' suit against Rafferty & Williams (see p. 248, cross Q. 49½), and *then testified,* on the point of melting at 103° F., *quite inconsistently with his present position;* is the patent so obscure and misleading as to have deceived and misled even him?

Is it not perfectly evident that the trouble is not in the patent, but in the appellant's present attempt to grossly pervert its meaning?

THIRD DEFENSE: THAT THE REISSUED LETTERS PATENT HAS NOT BEEN INFRINGED.

If appellee's view of the Mege U. S. patent be sound (and it received the approval of the court below), then the present reissue was void *ab initio,* being taken six years after the

expiration of the original patent, and there is no question of infringement to discuss.

But if appellant's view, that the U. S. patent was for an *improvement* on the original invention, and not for the original invention itself, be sound, then the question of infringement remains.

In such case, the so-called improvement was later in date than the foreign patents of Mege, and later in date than the U. S. patent of Paraf, dated April 8, 1873; and it must necessarily be limited in its construction by reason of said prior patents, or even anticipated altogether by the Paraf patent, which was set up as an anticipation in defendant's answer (p. 18, near middle).

Assuming such limitations, the question of infringement is easily disposed of.

The defendant's process and product are substantially different from those of the Mege patent.

First: The product.

The defendant's product, made by melting, without digestion, at from 120° F. to 130° F., and settling at from 125° F. to 135° F., *has no butter taste or smell.* (Manley, p. 53, Ans. 8, 9; Barker, p. 388, Ans. 14; Morton, p. 219, Ans. 10).

As hereinabove shown, the peculiar butter flavor of the Mege product is undoubtedly due to the presence therein of a small quantity of butyric acid (butyrine) or other equivalent odoriferous volatile oil, created during and by the process of artificial digestion. (*Ante*, p.). Mege, in his first reissue and his French patent, *in terms declared a volatile odoriferous oil to be a component element of the product*, and the complainants' expert, Prof. Chandler, finds the butter-flavor to have been the cause of this declaration. (*Ante*, p.). The peculiar characteristic flavor of butter

is due to butyrine (Morton, p. 141, Ans. 154, 155; Chandler, Id., p. 155, Ans. 15).

Rendered by heat alone, the defendant's product, having none of this volatile odoriferous oil, *is not the same mixture or chemical compound as the Mege oil*, for precisely the same reason that butter is not the same substance as mere tasteless and odorless fat deprived of tissue and stearine.

The product, thus essentially different from that described by Mege, *owes this difference to an essential and substantial difference in the processes.* Hence, neither the product nor the process of defendant is an equivalent to that of Mege.

The question of infringement depends entirely upon the construction to be given to the Mege American patent.

On the complainants' theory, this patent is merely for an improvement on the prior foreign process. It must, therefore, on this theory, be narrowly construed, (although they, in effect, assume to construe it more *broadly* than the foreign patents). How can any narrow construction of it cover the entirely different process used by the defendant? And how can such narrow construction *both* dodge the prior foreign patents, the prior Paraf patent, *and* cover the defendant's process? Where can the line be drawn? If it be drawn at the *hashing*, Paraf did that; if it be drawn at the *melting at about 120° F., without artificial digestion*, Paraf did that. It cannot be drawn at the *separate settling* at the melting temperature of fats, for the English patent did that; nor at the *crystallization of the stearine within the limits of 86° F. to 98° F.*, for, first, the defendants crystallize the stearine at a temperature below these limits, and, secondly, the foreign patents gradually cooled the fat from 103° F. down far below 86° F., and in that gradual cooling, the fat passed through these limits (98° to 86°) and the stearine perfectly crystallized out during such passage and before the fat finally solidified. (Morton, pp. 252, 261.)

We can conceive of no way in which this patent, if taken to be for a mere improvement, can be construed and sustained, in view of the prior art and of its own explicit declarations, unless it be for a process which includes the specific proportion of gastric juice, the specific temperatures, and the specific details of manipulation mentioned in its specification; *and these are not used by the appellee.* Such a construction, however, would still render the claim for the *product* invalid; because there can be no doubt that the product of the U. S. patent is the same as that of the prior foreign patents, although not the same as the tasteless and inodorous product of the defendants. It would also ignore the explicit declaration of M. Mege that the invention which he was seeking to patent here was the same as that which he had already patented abroad.

On the question of infringement, the burden of proof is on the appellants. We respectfully submit that the evidence leaves no doubt that the defendant's product and process are entirely different from those of the patent. On this, as on other points, the court below agreed with the views of appellee's counsel and experts, although it did not deem it necessary to formally decide the question.

Respectfully submitted,

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